

TURCK

Industrial
Automation

**USER-MANUAL
RFID SYSTEM**

**INSTALLATION
OF THE *BL IDENT*®
HF-SYSTEM**



Sense it! Connect it! Bus it! Solve it!

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Warning! **Before commencing the installation**

- Switch device off.
- Protect device from accidentally switching it on.
- Determine whether device is free of voltage.
- Grounding and short-circuiting.
- Cover or enclose adjacent parts which remain under voltage.
- The instructions provided for mounting the device must be followed.
- Only personnel qualified per EN 50 110-1/-2 (VDE 0105 Section 100) are permitted to handle and operate this device/system.
- In regards to the installation, please ensure that you follow the statical discharge procedure on your person prior to touching the device.
- The function earth (FS) must be connected to the protective earth (PE) or the potential equalization. The establishment of this connection is the responsibility of the installer.
- Connection and signal cables must be installed in such a way that inductive and capacitive interspersions may not impact the automation functions.
- Automation technology equipment and their operating elements must be installed in such a way that they are protected from accidental operation.
- In order to prevent undefined states in the automation equipment caused by cable and wire breakage on the signal side, respective safety measures must be implemented on the hardware and software side when establishing the I/O-connection.
- Please ensure the safe isolation of low voltage in connection with a 24-Volt supply. Use only power supply units which meet the requirements per IEC 60 364-4-41 or rather HD 384.4.41 S2 (VDE 0100 Section 410).
- Fluctuations or rather deviations of the power supply voltage from the nominal value may not exceed tolerances listed in the technical data otherwise operating failures and dangerous situations can not be excluded.
- Emergency-Off equipment per IEC/EN 60 204-1 must remain in effect in all operating modes of the automation equipment. Release of the Emergency-Off equipment must not cause a restart.
- Built-in devices for enclosures or cabinets must only be operated and maintained when installed; tabletop devices or portables only when the housing is closed.
- Measures must be taken to ensure that an interrupted program can be restarted according to specifications following voltage drops and failures. Here, no dangerous operating states including brief ones must occur; if necessary force Emergency-Off.
- External measures must be taken at locations where failures of the automation equipment may cause damage to persons and property; these external measures must ensure or rather force safe operation even when failures or interferences occur (e.g. with the help of independent limit switches, mechanical locks, etc.).
- The electrical installation must be completed according to relevant specifications (e.g. cable diameters, fuses, connection of earth conductor).
- Only qualified personnel is permitted to complete all work related to transportation, installation, start-up and maintenance. (Adhere to IEC 60 364 or rather HD 384 or DIN VDE 0100 and national accident prevention rules).
- All covers and doors must be closed during operation.

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1.1 Explanation of used symbols



Danger

Certain risk of personal injury
Proceed with special caution.

This symbol is shown next to warnings, indicating a potential source of danger.

This refers to personal injury or death that are almost certain if warning instructions are not observed.



Attention

Risk of damage to devices
Proceed with special care.

This symbol is shown next to warnings, indicating a potential source of danger.

This refers to possible damage to systems (hardware and software) and installations.



Note

Important information and description of a particular procedure

This symbol is placed next to general instructions that indicate important information on the procedure for one or several operations. The relevant instructions may simplify the work and help for example to avoid additional work caused by incorrect actions.

1.2 Introduction

This manual contains all information for the professional installation of the *BL ident*[®]-system, especially in regards to data carriers and read/write heads.

The following chapters provide an overview of the *BL ident*[®]-system, how to plan a *BL ident*[®]-system, show the required installation guidelines and provide a short overview of the EMC guidelines.

In addition, the manual describes functional principles of the data carriers and the read/write heads, technical data, and operating data, as well as available accessories.

1.3 General instructions



Attention

Please read this section carefully. Safety aspects cannot be left to chance when handling electrical devices.

This manual contains the required information for the start-up of the TURCK *BL ident*[®]-system. It was specifically developed for qualified professional personnel with the required technical know-how.

1.3.1 Intended use



Danger

The devices described in this manual must be used only in applications outlined in this manual and the respective technical descriptions, and only in connection with devices and components from certified third-party manufacturers.

The prerequisites for perfect and save operation of the devices are proper transportation, storage, assembly and installation, as well as careful operation and maintenance.

1.3.2 Instructions for project planning/product installation



Danger

It is imperative that the safety and accident protection guidelines are heeded in regards to each application.

The prerequisites for perfect and save operation of the devices are proper transportation, storage, assembly and installation, as well as careful operation and maintenance.



Danger

It is imperative that the safety and accident protection guidelines are heeded in regards to each application.

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2.1 **BL ident® – Modular RFID system**

BL ident® is a complete RFID-system which showcases its special characteristics, especially in the industrial environment. The system's modular design is based on the I/O-systems BL67 (field installation) and BL20 (switching cabinet installation) or rather on the compact fieldbus modules BL compact (field mount).

Each *BL ident®*-system can be assembled as a custom RFID solution by freely combining data carriers, read/write heads, connectivity technology, and interfaces (gateway and RFID-module).

Available are not only extremely fast FRAM data carriers with almost unlimited write capacity but also high temperature versions up to 240 °C which are suitable for a paint finishing line application.

Another feature: *BL ident®* can be integrated very easily into existing system configurations.

2.1.1 **BL ident® – Flexibility for your application; security for your investment!**

The RFID-system *BL ident®* provides on all levels the flexibility you need for your application: From the selection of the data carriers to the read/write heads, including connection to the control level. You will always have the opportunity to perfectly configure the system in order to meet your specific application needs.

BL ident® is save for the future and interoperable because it is based on international, worldwide standards. Thus you will enjoy a high level of investment security.

2.1.2 **BL ident® – Data carriers**

- Special, small design (Ø 7.5 mm for HF)
- EEPROM data carrier for high piece numbers
- FRAM data carrier for high speeds and a high number of write cycles
- High temperature carrier for continuous process control at -40...+240 °C
- Autoclave data carrier for an application with approx. 130 °C hot steam under pressure
- Direct mounting on metal
- Open and worldwide standards (ISO 15693 and ISO 18000-6C)

2.1.3 **BL ident® – Read/write heads**

- Industry-suitable and robust design
- Fully casted read/write heads (HF)
- Read/write distances of up to 1000 mm, depending on environmental conditions (HF) or several meters (UHF)
- Suitable for food and beverage applications, wash-down (IP69K)

2.1.4 **BL ident® – Interfaces**

- Modular design (BL20 and BL67) with up to 16 channels per gateway depending inter alia on the kind of fieldbus, system parameter and performance of the periphery
- *BL ident®* for switching cabinet installation
- BL67 for direct field installation
- *BL compact* for direct field installation (in part with integrated I/Os)
- Cable length to read/write head up to 50 m
- Possible alternating operation of HF and UHF read/write heads on the same interface modules
- Versatile and user-friendly fieldbus connections (PROFIBUS-DP, DeviceNet™, CANopen, PROFINET IO, Ethernet Modbus TCP, EtherNet/IP™, EtherCAT)
- Programmable gateways for decentralized and autarkic control tasks
- Additional integration of I/O-modules on the same gateway or rather bus node
- Modules for space-saving and user-friendly mounting in the field (BL compact)

Interfaces for the fieldbus connection: Sets and single components

Complete sets of interfaces are available for connecting the fieldbus.

An existing set may be retroactively fitted with an additional channel (an electronic and basic module are needed for a pair of channels).

The interfaces may be populated with a maximum of 8 channels; interfaces with simple I/O-communication allow a maximum of 16 channels, depending on the fieldbus type.

Table 1:
Expansion and
interfaces in IP20

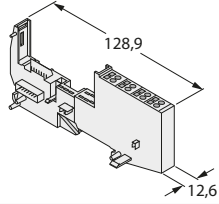
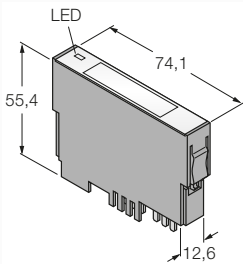
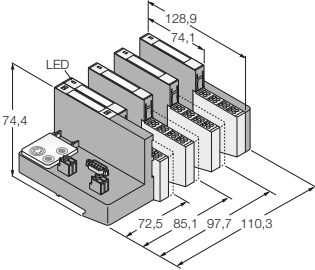
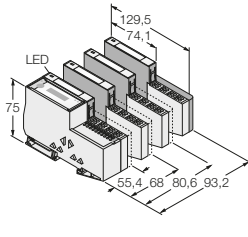
Dimensions/ enclosure lengths	Protec- tion class	Description	Model type
	IP20	BL20 basic module	BL20-S4T-SBBS
	IP20	RFID electronic module for use with function blocks or rather with programmable gateway for PROFIBUS-DPV1, PROFINET IO, Ethernet Modbus TCP, EtherNet/IP™	BL20-2RFID-A
Interfaces in 2-, 4-, 6- and 8-channel designs are available (the last digit of the model type description identifies the number of channels; in the example here, only the 2-channel versions are shown).			
	IP20	Interfaces (sets) for PROFIBUS-DPV1 PROFINET IO	TI-BL20-DPV1-2 TI-BL20-EN-PN-2
	IP20	Interfaces (sets) – programmable for Ethernet Modbus TCP EtherNet/IP™	TI-BL20-PG-EN-2 TI-BL20-PG-EIP-2
	IP20	Interfaces (sets) ECONOMY for PROFIBUS-DPV1	TI-BL20-E-DPV1-2

Table 2:
Expansion and
interfaces in IP20
for basic
communication

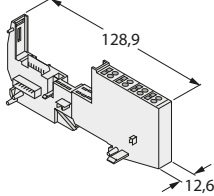
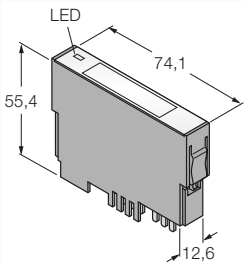
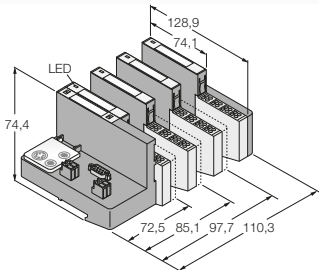
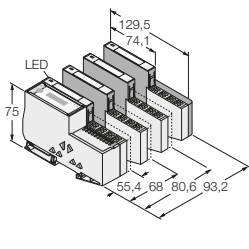
Dimensions/ enclosure lengths	Protec- tion class	Description	Model type
	IP20	BL20 basic module	BL20-S4T-SBBS
	IP20	RFID electronic module for basic I/O-communication for PROFIBUS-DPV1, DeviceNet™, PROFINET IO, Ethernet Modbus TCP, EtherNet/IP™, CANopen	BL20-2RFID-S
Interfaces in 2-, 4-, 6- and 8-channel designs are available (the last digit of the model type description identifies the number of channels; in the example here, only 2-channel versions are shown).			
	IP20	Interfaces (sets) for basic communication PROFIBUS-DPV1 DeviceNet™ Ethernet Modbus TCP PROFINET IO EtherNet/IP™	TI-BL20-DPV1-S-2 TI-BL20-DN-S-2 TI-BL20-EN-S-2 TI-BL20-EN-PN-S-2 TI-BL20-EIP-S-2
	IP20	Interfaces (sets) – programmable for Ethernet Modbus TCP EtherNet/IP™	TI-BL20-PG-EN-S-2 TI-BL20-PG-EN-2 TI-BL20-PG-EIP-S-2 TI-BL20-PG-EIP-2
	IP20	Interfaces (Sets) ECONOMY for basic communication PROFIBUS-DPV1 DeviceNet™ CANopen EtherCAT	TI-BL20-E-DPV1-S-2 TI-BL20-E-DN-S-2 TI-BL20-E-CO-S-2 TI-BL20-E-EC-S-2

Table 3:
Expansion and
interfaces in IP67

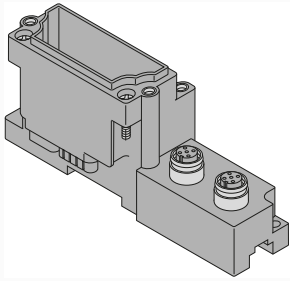
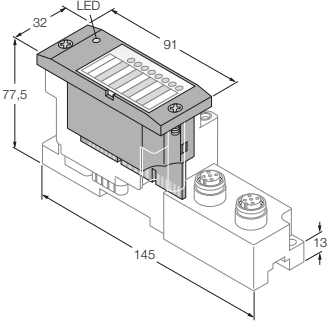
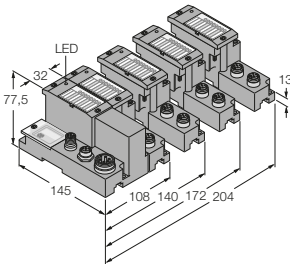
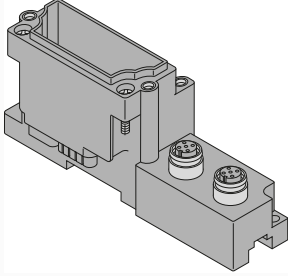
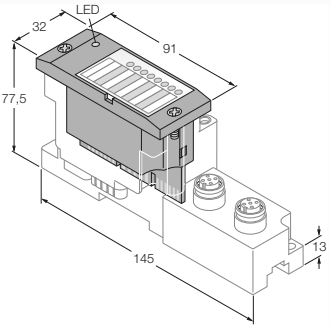
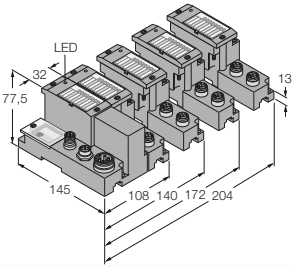
Dimensions/ enclosure lengths	Protection class	Description	Model type
	IP67	BL67 basic module	BL67-B-2M12
	IP67	RFID electronic module for use with function blocks or rather with programmable gateway for PROFIBUS-DPV1, PROFINET IO, Ethernet Modbus TCP, EtherNet/IP™	BL67-2RFID-A
Interfaces in 2-, 4-, 6- and 8-channel designs are available (the last digit of the model type description identifies the number of channels; in the example here, only 2-channel versions are shown).			
	IP67	Interfaces (sets) for PROFIBUS-DPV1 PROFINET IO	TI-BL67-DPV1-2 TI-BL67-EN-PN-2
	IP67	Interfaces (sets) – programmable for PROFIBUS-DP Ethernet Modbus TCP EtherNet/IP™	TI-BL67-PG-DP-2 TI-BL67-PG-EN-2 TI-BL67-PG-EIP-2

Table 4:
Expansion and
interfaces in IP67
for basic
communication

Dimensions/ enclosure lengths	Protec- tion class	Description	Model type
	IP67	BL67 basic module	BL67-B-2M12
	IP67	RFID electronic module for basic I/O-communication for PROFIBUS-DPV1, DeviceNet™, PROFINET IO, Ethernet Modbus TCP, EtherNet/IP™, CANopen, EtherCAT	BL67-2RFID-S
Interfaces in 2-, 4-, 6- and 8-channel designs are available (the last digit of the model type description identifies the number of channels; in the example here, only 2-channel versions are shown).			
	IP67	Interfaces (sets) for basic communication PROFIBUS-DPV1 DeviceNet™ PROFINET IO PROFINET IO + AIDA EtherNet/IP™ Multi protocol (Ethernet Modbus TCP + EtherNet/IP™)	TI-BL67-DPV1-S-2 TI-BL67-DN-S-2 TI-BL67-EN-PN-S-2 TI-BL67-PN-AC-2 TI-BL67-PN-AC-S-x TI-BL67-EIP-S-2 TI-BL67-EN-S-2
	IP67	Interfaces (sets) for basic communication, programmable for PROFIBUS-DP Ethernet Modbus TCP EtherNet/IP™	TI-BL67-PG-DP-S-2 TI-BL67-PG-EN-S-2 TI-BL67-PG-EN-2 TI-BL67-PG-EIP-S-2

Compact fieldbus stations with interfaces for fieldbus connection

The interfaces of the compact fieldbus stations *BL compact* have a 2-channel design and in part are equipped with integrated, configurable, digital I/Os.

Table 5:
*BL compact –
Compact fieldbus
stations with
RFID interface in
IP67*

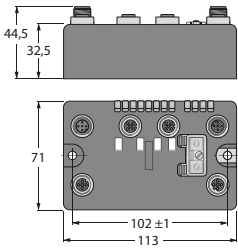
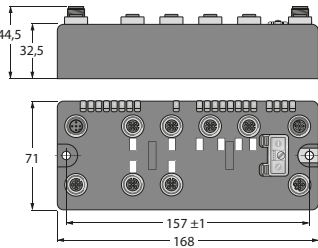
Dimensions/ enclosure lengths	Protection class	Description	Model type
	IP67	Compact fieldbus station for PROFIBUS-DP (BL compact, advanced RFID interface = acyclic data exchange)	BLCDP-2M12MT-2RFID-A
	IP67	Compact fieldbus station for PROFIBUS-DP (BL compact, simple RFID interface = simple communication)	BLCDP-2M12MT-2RFID-S
	IP67	Compact fieldbus station for PROFIBUS-DP (BL compact, basic RFID interface = simple I/O-communication and 8 digital inputs (outputs, configurable, PNP with diagnostic function))	BLCDP-6M12LT-2RFID-S-8XSG-PD
	IP67	Compact fieldbus station for DeviceNet™ (BL compact, simple RFID Interface = simple I/O communication) 8 digital inputs/outputs, configurable, PNP, with diagnostic function)	BLCDN-6M12LT-2RFID-S-8XSG-PD
	IP67	Compact fieldbus station for PROFIBUS-DP (BL compact, advanced RFID interface = acyclic data exchange) 8 digital inputs, PNP, with diagnostic function)	BLCDP-6M12LT-2RFID-A-8DI-PD
	IP67	Compact fieldbus station for PROFIBUS-DP (BL compact, advanced RFID interface = acyclic data exchange) 8 digital inputs/outputs, configurable, PNP, with diagnostic function)	BLCDP-6M12LT-2RFID-A-8XSG-PD

Table 5:
BL compact –
Compact fieldbus
stations with
RFID interface in
IP67

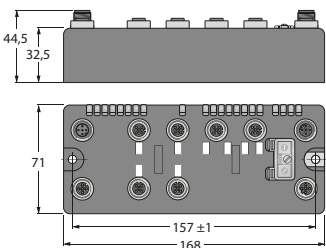
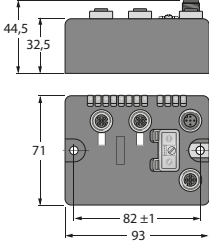
Dimensions/ enclosure lengths	Protection class	Description	Model type
	IP67	Compact fieldbus station for PROFIBUS-DP (BL compact, simple RFID interface = simple I/O communication) 8 digital inputs, PNP, with diagnostic function)	BLCDP-6M12LT-2RFID-S-8DI-PD
	IP67	Compact fieldbus station for DeviceNet™ (BL compact, (simple RFID interface = simple I/O communication) 8 digital inputs/outputs, configurable, PNP, with diagnostic function)	BLCDN-6M12LT-2RFID-S-8XSG-PD
	IP67	Compact fieldbus station for CANopen (BL compact, simple RFID interface = simple I/O communication) 8 digital inputs/outputs, configurable, PNP, with diagnostic function)	BLCCO-6M12LT-2RFID-S-8XSG-PD
	IP67	Compact fieldbus station for CANopen (BL compact, simple RFID interface = simple I/O communication)	BLCCO-4M12L-2RFID-S-2RFID-S
	IP67	Compact fieldbus station for Multi protocol = Ethernet Modbus TCP + EtherNet/IP™ (BL compact, simple RFID interface = simple I/O-communication)	BLCEN-2M12LT-2RFID-S BLCEN-4M12LT-2RFID-S-2RFID-S
	IP67	Compact fieldbus station for Multi protocol = Ethernet Modbus TCP + EtherNet/IP™ (BL compact, simple RFID interface = simple I/O-communication), 8 digital inputs/outputs, configurable, PNP, with diagnostic function)	BLCEN-6M12LT-2RFID-S-8XSG-PD
	IP67	Compact fieldbus station for Multi protocol = Ethernet Modbus TCP + EtherNet/IP™ (BL compact, simple RFID interface = simple I/O-communication), RS232 serial interface	BLCEN-3M12LT-1RS232-2RFID-S

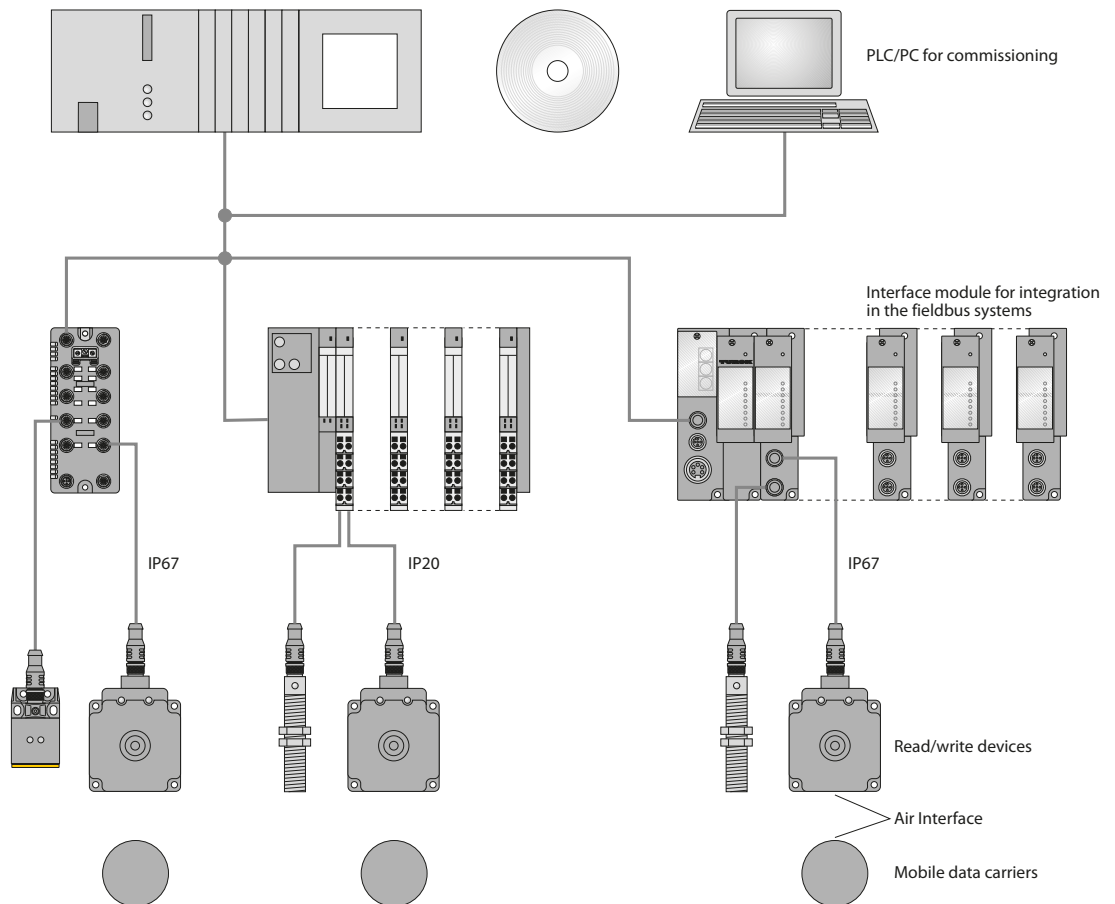
Table 5:
BL compact –
Compact fieldbus
stations with
RFID interface in
IP67

Dimensions/ enclosure lengths	Protec- tion class	Description	Model type
	IP67	Compact fieldbus station for DeviceNet™ (BL compact, simple RFID interface = simple I/O-communication)	BLCDN-2M12S-2RFID-S
	IP67	Compact fieldbus station for CANopen (BL compact, simple RFID interface = simple I/O communication)	BLCCO-2M12S-2RFID-S

2.2 Schematic display of the identification system *BL ident*®

The TURCK *BL ident*®-system consists of multiple layers. Each layer offers different variations. It is possible to retrofit the application so that it accommodates the complete system.

Figure 1:
System overview



2.2.1 Support for *BL ident*®-projects

The following software and documents will provide additional help for project planning, installation, and start-up:

- To simulate and optimize an application, please go to <http://www.turck.com>, where you may access the "*BL ident*®-Simulator" for free.
- D101581 - "Interface Module for Fieldbus Connection." This manual describes the professional operation of *BL ident*®-interface modules.
- D101579 - "Start-up with PROFIBUS-DP"
- D101640 - "Start-up with CoDeSys for Programmable Gateways"
- D101642 - "Start-up with DeviceNet™"
- D101644 - "Start-up with EtherNet/IP™"
- D101648 - "Start-up with PROFINET"
- D101763 - "Start-up with CANopen"
- D101831 - "Installation of the *BL ident*®UHF-System"
- D101606 - This manual contains a software description of a so-called "Handheld" (programming device) which is used to read and write data independent of the location.
- D101584 - This manual contains a hardware description of a so-called "Handheld" (programming device) which is used to read and write data independent of the location.

The listed manuals can be downloaded from the internet.

2.2.2 Networking with *BL ident*®-systems

Based on the possibility to integrate *BL ident*®-systems into (existing) bus systems, a network of multiple *BL ident*®-systems can be established.

Please follow the guidelines for maximum expansion concerning the bus system in use.

For example, without repeater a PROFIBUS-DP-system can comprise a maximum of 31 stations and a master.

2.3 Identification systems with radio frequency technology (RFID)

RFID is the abbreviation for radio frequency identification.

A RFID-system comprises a data carrier, a device to read from and write to a data carrier, as well as other devices which are used to transfer and process data.

The transmission of data from the data carrier to the read/write head occurs free of contact via electromagnetic waves. This type of transmission is insensitive to mechanical contamination by dirt or temperature fluctuations.

The data carriers may be directly affixed to an object. This is why the term "mobile data carrier" is used as well. Other terms for the data carrier are TAG or transponder. The data content may consist of production and manufacturing data. Important here are those data which identify the product. Thus the description "identification system".

Additional opportunities exist because the data content can be changed by writing to the data carrier. Thus production/manufacturing processes can be retraced. Logistics/distribution can be optimized.

The "identification systems" can be integrated into (existing) fieldbus automation systems (e.g. PROFIBUS-DP). Connection to the respective fieldbus system occurs via a suitable interface module.

Standardized software components (e.g. the Proxy Ident Function Block for PROFIBUS-DP) allows user-friendly system integration and start-up.

2.4 Performance characteristics and applications of the *BL ident*® system

In order to meet the demands of different application environments, the TURCK *BL ident*® system offers numerous combinations from data carriers to read/write heads, as well as interface modules and automation systems (e.g. PROFIBUS-DP). Software components allow user-friendly integration and start-up.

The following describes the performance characteristics of the TURCK *BL ident*®-System:

2.4.1 Protection class

Some data carriers, including the respective read/write heads have a high protection class (e.g. **IP69K**) and thus are suitable for use in the harshest, industrial environments.

The read/write heads are also available in IP69K (wash-down design).

Connection to a fieldbus system is realized with a suitable TURCK interface module. The interface modules for CANopen are available in protection class IP20. TURCK connection cables with the respective protection class complete the identification system.

Temperature-resistant data carriers up to 240°C are available for the high temperature range.

2.4.2 Life-cycle

The life-cycle is a result of the data carriers' possible read/write operations.

FRAM data carriers can guarantee a **unlimited** number of read operations and 10^{10} write operations.

EEPROM data carriers can guarantee a **unlimited** number of read operations and 10^4 or 10^5 write operations.

The data carriers do not require a battery.

2.4.3 Transmission frequency

The TURCK *BL ident*® system operates with a transmission frequency of 13.56 MHz in the HF range or with a country-specific transmission frequency in the UHF range (860-960 MHz) between the data carriers and the read/write heads.

HF: Systems which operate with this transmission frequency are mostly insensitive to electromagnetic interference. This is why the transmission frequency of 13.56 MHz is now standard for many RFID applications.

UHF: Systems with this frequency range reach longer read/write distances compared to HF, typically several meters. The carrier frequencies are country specific; in Europe they are between 865 and 868 MHz, for example.

2.4.4 Model types

Data carriers

HF: TURCK offers round, flat data carriers, e.g. with 16, 20, 30 and 50 mm diameters, for the HF operating frequency.

The high temperature data carriers have a cylinder design (e.g. 22 x 125 mm).

Inlays and stickers have foil thickness (e.g. size 49 x 46 mm).

Special designs are suitable for mounting on metal. Other data carrier designs have glass cylinder housing, or flat check card format. Some data carriers have holes so that they can be affixed with screws.

UHF: UHF-suitable data carriers have different designs and can be mounted in various ways; they are either optimized for small housing dimensions or long data transmission distances. Data carriers with high protection class, also for external applications, are available, including data carriers for direct mounting on metal or printable labels.

TURCK delivers customer-specific data carrier solutions upon request.

Read/write heads

HF: The read/write heads are available in different designs from standard M18 and M30 thread to cuboid designs Q14, CK40, Q80, S32XL, including Q80L400 and Q350 for long distances of up to 1000 mm.

UHF: Different cuboid designs are available, e.g. compact read/write heads in a housing with approx. 170 mm or 280 mm edge length for long data transmission distances of up to several meters.

2.4.5 Memory capacity

The memory capacity of the data carriers for the HF range is 64 or 128 byte (48 or 112 Byte user data) with an EEPROM-memory and 2 or 8 Kbyte (2000 or 7936 byte user data) with a FRAM-memory.

EEPROM data carriers with up to 110 byte (94 byte user data) are available for the UHF range.

FRAM: (Ferroelectric Random Access Memory), non-volatile, longer life-cycle because of a larger number of read/write operations and faster write operations compared to EEPROM.

EEPROM: (Electrically Erasable Programmable Read Only Memory), non-volatile.

The data carriers for HF operating frequency meet the ISO 15693 communication standard.

The data carriers for the UHF frequency range meet the ISO 18000-6C and EPCglobal Class 1 Gen 2 communication standard.

2.5 User data ranges of the data carrier versions

2.5.1 Overview of the HF-TURCK data carriers

The HF data carriers type **I-Code SL2** are writable and readable, starting with byte No. 0 to Byte No. 111.

Table „[Data structure of the I-Code SL2 data carriers](#)“ page 2-16 describes the data structure of the data carriers:

- TW-I14-B128
- TW-L43-43-F-B128
- TW-L82-49-P-B128
- TW-R16-B128
- TW-R20-B128
- TW-R30-B128
- TW-R50-B128
- TW-R50-90-HT-B128
- ...

Table 6:
Data structure of
the I-Code SL2
data carriers

Byte No. (StartAddress)	Content	Access	Block No. (one block comprises 4 Byte)
-16 to -9	UID	Read only	-4 to -3
-8 to -5	Tag information	Read only via special commands	-2
-4 to -1	Conditions for write access		-1
0 to 111	User data range	Read/write	0 to 27

The HF data carriers type **I-Code SL1** are readable and writable, starting with byte No. 19 to Byte No. 64.

Table „[Data structure of the I-Code SL1 data carriers](#)“ page 2-17 describes the data structure of the data carriers:

- TW-R16-B64
- TW-R22-HT-B64
- ...

*Table 7:
Data structure of
the I-Code SL1
data carriers*

Byte No. (StartAddress)	Content	Access	Block No. (one block comprises 4 Byte)
0 to 8	UID	Read only	0 to 1
9 to 12	Conditions for write access	Read only via special command	2
13 to 16	Special functions (e.g. EAS / QUIET)	Read/write via special commands	3/4
17	Family code		
18	Application identifier		
19 to 64	User data range	Read/write	4/5 to 15

The HF data carriers type **FRAM** are readable and writable, starting with byte No. 0 to Byte No. 1999.

Table „Data structure of the FRAM data carriers“ page 2-18 describes the data structure of the data carriers:

- TW-R20-K2
- TW-R30-K2
- TW-R50-K2
- TW-R50-90-HT-K2
- ...

Table 8:
Data structure of
the FRAM data
carriers

Byte No. (StartAddress)	Content	Access	Block No. (one block comprises 8 Byte)
0 to 1999	User data range	Read/write	0 to 249
2000 to 2007	UID	Read only via	250
2008 to 2015	AFI, DSFID, EAS	Read/write (with limitations) via special command	251
2016 to 2047	Special functions (e.g. EAS / QUIET)	Read only via special command	252 to 255

The HF data carriers type **FRAM** are readable and writable, starting with byte No. 0 to Byte No. 7935.

- TW-R50-K8

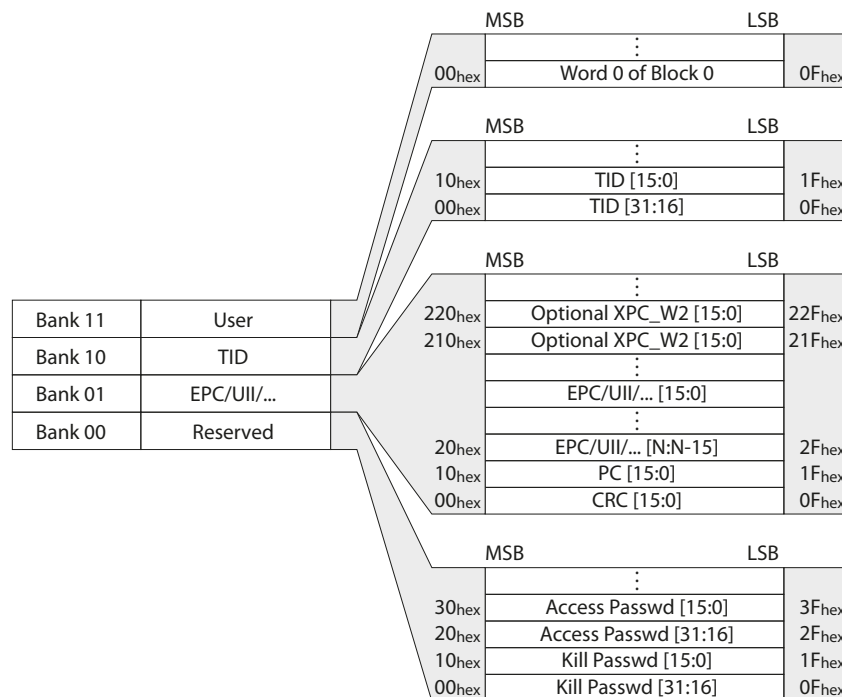
The data carrier applies of 248 blocks (00Hex up to F7Hex) with 32 Bytes each.

2.5.2 Overview of the UHF-TURCK data carriers

The UHF data carrier memory hierarchy is divided into four logical banks per ISO 18000-6C and can accommodate several blocks.

- **Reserved area:** Among other things (depending on the type of data carrier) this bank contains the passwords for memory access and memory deactivation. The passwords for the deactivation function are stored in the memory addresses 00_{hex} to 1F_{hex}. Memory access occurs via separate protocol commands.
- **EPC (Electronic Product Code) or UII (Unique Item Identifier):** This bank contains the basic identification data of the transponder. Thus a clear identification is later possible during operation if the data is different. In the first data word (2 Bytes) there are the specific protocol control bytes for the data carrier (from address 0x0000 on). The second word contains the 16 bit check sum (CRC) in the memory addresses from 0x0002 on. The data range of the EPC begins with address 0x0004. The data carriers vary on the basis of the first 8 bytes of the data range (addresses 0x0004 up to 0x000C).
- **TID (Data Carrier Identification):** This bank contains one of three class-identifier values (E0_{hex}, E2_{hex} or E3_{hex}) per ISO/IEC 15963 in the memory addresses 00_{hex} to 07_{hex}. The class-identifier does not specify the application. If the class-identifier is E0_{hex}, TID contains a 48 bit serial number, the composite 64 bit data carrier ID is unique among all data carrier classes defined in ISO/IEC 15963 and locked by manufacturer. If the class-identifier is E2_{hex}, TID contains a 12 bit mask-designer identifier a vendor-defined 12 bit data carrier model number, and the usage from addresses above 1F_{hex} is defined in version 1.5 and above of the EPCglobal data standards. If the class identifier is E3_{hex}, TID contains an 8 bit manufacturer identifier followed by 2 byte user memory present and size data, the 48 bit serial number, the 1 bit XTID and 15 bit XTID header data. The composite 80 bit data carrier ID is unique among all classes of data carriers defined in ISO/IEC 15963 and locked by manufacturer.
- **User area:** This bank is optional and contains a memory with various capacity for open, user-specific use.

Figure 2:
UHF data carrier
memory hierarchy



2.6 Read/write time in the data collection range of the HF read/write head

The time that the data carrier must remain in the data collection range of the read/write head in order to safely read and write all needed data depends on the following factors:

- Command type (read or write)
- Data carrier with memory type EEPROM or FRAM
- Data volume
- Expansion of the data detection range (depends on the combination of the type of read/write head and the data carrier)



Note

Please observe the recommended distances between the data carrier and the read/write head.

You may find the specifications for "recommended" and "maximum distance" in the chapter "Operating Data."

Data detection may be interrupted by the following interferences:

- Electromagnetic interferences
- Strong reflexions on metal parts in the direct environment of the data detection range

The following sections show the required time for the read/write functions of a specific data volume. The required time depends on the memory type of the data carrier.

Currently *BL ident*® offers HF data carriers with the following memory types:

- EEPROM-I-Code SL1
- EEPROM-I-Code SL2
- FRAM

Currently *BL ident*® offers UHF data carriers with the following memory types:

- EEPROM-U-Code G2
- EEPROM-Monza
- EEPROM-Higgs

EEPROM-I-Code-SL2 data carriers

The EEPROM data carrier is divided into data blocks. Each data block comprises:

- **4 byte**

The start address and length of the byte to be read from and written to can be freely selected within the user data range („[Data structure of the I-Code SL2 data carriers](#)” page 2-16).

For examining the required read/write times it should be observed that access to the user data range always occurs block by block. For example, time is not shortened when the length of the byte to be read is less than 4 byte. The start addresses of the blocks are 0,4,8,12...

Two blocks are processed when the selected start address is "5" and the length of the byte to be read is "4".

For **time-critical applications**, please observe the two instructions below:



Note

As start address and length of the byte to be read, please only enter multiple of "4"! The start address and length of the byte to be read are attributes of the read/write commands!



Note

Please select small addresses when selecting the data memory range!



Attention

The following two diagrams are valid when the instructions for time-critical applications are followed!

Figure 3: Pause times when reading a data carrier type "EEPROM-I-Code-SL2".

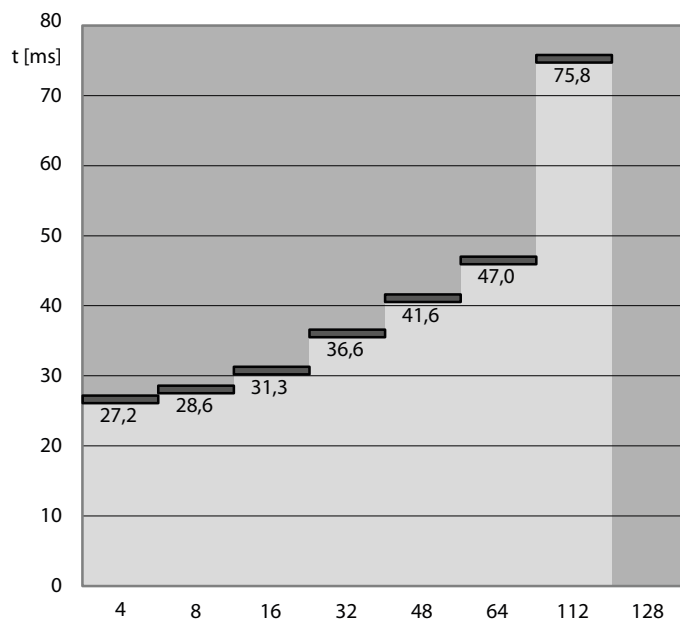
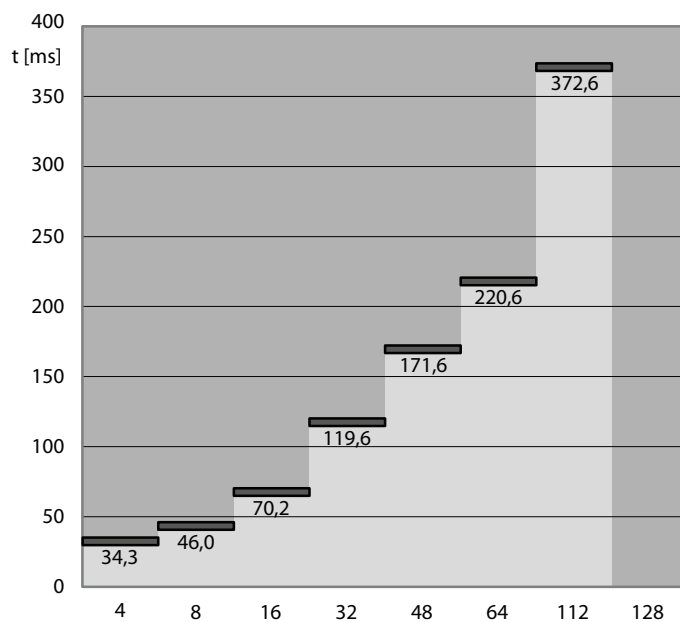


Figure 4: Pause times when writing a data carrier type "EEPROM-I-Code-SL2".



EEPROM-I-Code-SL1 data carriers

The EEPROM data carrier is divided into data blocks. Each data block comprises:

- **4 byte**

The start address and length of the Byte to be read from and written to can be freely selected within the user data range („[Data structure of the I-Code SL1 data carriers](#)” page 2-17.)

For examining the required read/write times it should be observed that access to the user data range always occurs block by block. For example, time is not shortened when the length of the byte to be read is less than 4 byte. The start addresses of the blocks are 16, 20, 24, 28...

Two blocks are processed when the selected start address is "19" and the length of the byte to be read is "4".

For **time-critical applications**, please observe the two instructions below:



Note

As start address and length of the byte to be read from and written to, please enter multiple of "4" only!

The start address and length of the byte to be read from and written to are attributes of the read/write commands!



Note

Please select small addresses when selecting the data memory range!



Attention

The following two diagrams are valid when the instructions for time-critical applications are followed!

Figure 5: Pause times when reading from a data carrier type "EEPROM-I-Code-SL1".

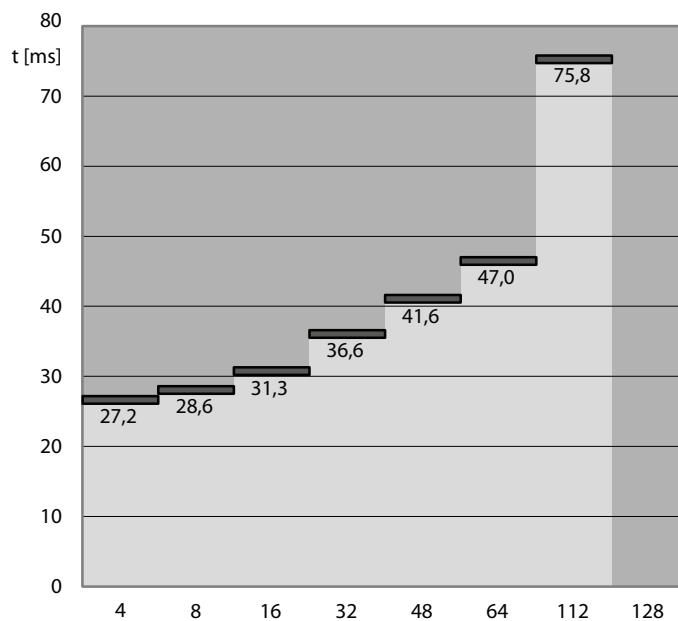
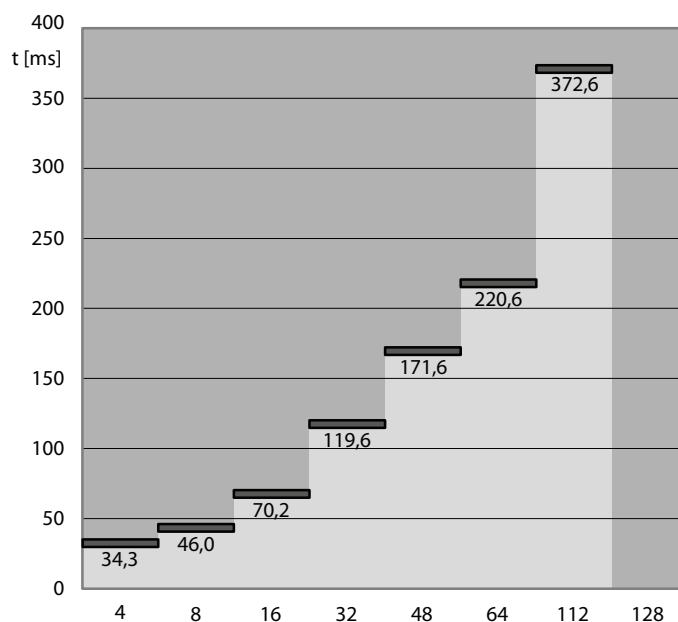


Figure 6: Pause times when writing to a data carrier type "EEPROM-I-Code-SL1".



FRAM data carrier

The FRAM data carrier is divided into data blocks. Each data block comprises:

- **8 byte**

The start address and length of the Byte to be read from and written to can be freely selected within the user data range („[Data structure of the FRAM data carriers](#)“ page 2-18)

For examining the required read/write times it should be observed that access to the user data range always occurs block by block. For example, time is not shortened when the length of the byte to be read is less than 8 byte. The start addresses of the blocks are 8, 16, 24, 32...

Two blocks are processed when the selected start address is "19" and the length of the byte to be read is "8".

For **time-critical applications**, please observe the two instructions below:



Note

As start address and length of the byte to be read from and written to, please enter multiple of "8" only!
The start address and length of the byte to be read from and written to are attributes of the read/write commands!



Note

Please select small addresses when selecting the data memory range!



Attention

The following two diagrams are valid when the instructions for time-critical applications are followed!

Figure 7: Pause times when reading from the data carrier type "FRAM".

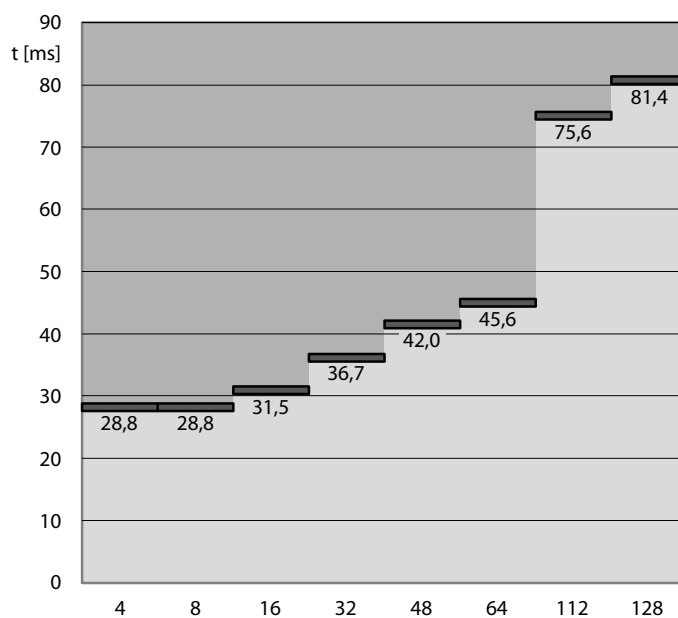
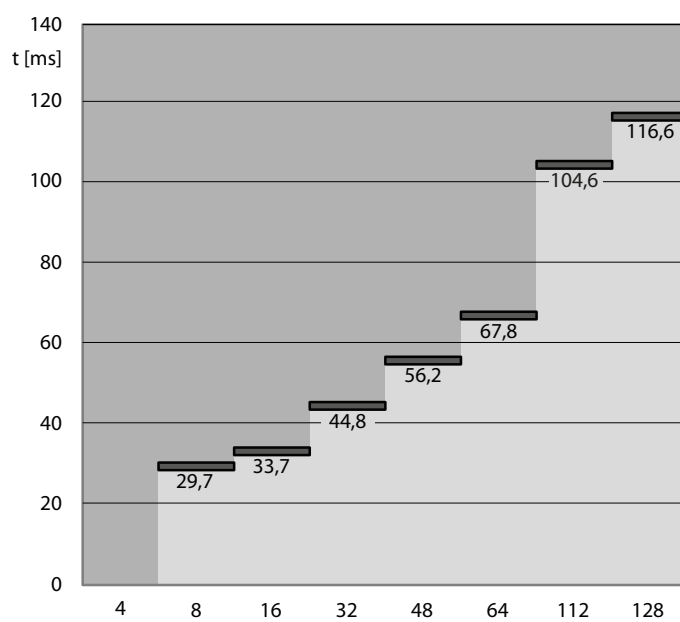


Figure 8: Pause times when writing from the data carrier type "FRAM".



2.7 Data carrier speed to the read/write head for HF-RFID-systems



Note

The speed with which the data carrier can move by the read/write head is impacted by the data volume to be processed and varies depending on the selected read/write head and data carrier combination.

Thus numerical data for maximum speed and data volume are always only examples!

For example, the speed with which the data carrier can move by the read/write head can be increased up to 2.5 m/s for 8 byte at a distance of 36 mm when the data carrier TW-R50-K2 and the read/write head TN-CK40-H1147 are used. The application parameters "speed, data volume, and distance" can be variegated with the "BL ident®-Simulator". The best read/write head and data carrier combination for the respective application can be seen in the simulator.

The simulator can be found online at <http://www.turck.com>. In any case, please pay attention to the instructions and the limits explained in this section.



Note

Next to the data processing time of the read/write head, the processing time of the entire identification system should be taken into consideration as well („System overview" page 2-11). The time it takes to transfer and process data within the entire identification system can vary from application to application!

If your application requires a fast sequence of data carriers, it might be necessary to decrease the speed with which the data carriers move by the read/write heads.

In case of doubt we recommend an empirical determination of the possible speed.



Note

The transmission curves (maximum read/write distance, length of transmission range) only represent typical values under laboratory conditions.

The reachable distances may vary by 30 % because of component tolerances, installation issues involving the application, environmental conditions, and interference caused by materials (especially metals).

This is why the application should be tested under realistic conditions (especially when the read/write functions are active).

In addition, the recommended distance between the data carrier to the read/write head should be observed if at all possible in order to reach perfect read/write processes despite potential distance variations.

Depending on the actual transmission curve of the respective application, the parameters, reachable traversing speed (read/write on the fly) and the maximum transmittable data volume change as well.

2.7.1 Read/write distances

The reachable read/write distances depend on the combination of data carrier and read/write head. The possible read/write distance is impacted by the data volume to be read and written and by the speed with which the data carrier moves by the read/write head. Read/write heads with UHF operating frequencies reach a distance of several meters. Read/write heads with 13.56 MHz (HF) transmission frequency reach short distances. Here, the longest distance (approx. 1000 mm) is reached with the model type TNL-R-Q350-H1147, e.g. when the data carrier TW-L86-54-C-B128 is used.

2.7.2 BL ident® simulator for HF-RFID

The application parameters "speed, data volume and distance" can be variegated with the software "BL ident® simulator". Thus the optimum combination of read/write head and data carrier can be selected.

The simulator can be found online at <http://www.turck.com...>.

Nowadays the utilization of sensors and actuators and even fieldbuses is state of the technology in many areas of the industry. In contrast, when utilizing RFID-systems, there always are questions concerning the air-interface, e.g. "How fast can I move the read/write head?" or "What distance can I use to move the Read/write heads?" This means that a general uncertainty exists concerning the application possibilities of a RFID-system.

General specifications like "recommended read/write distance" or "transmission speed = 0.5 ms/Byte" are usually not adequate for determining the usability of the device in a certain application because application variables like data volume, speed, and distance are the result of a complex interplay between read/write head and data carriers.

The "BL ident®-Simulator" is suitable to simulate the respective application, leading to the right choice.

By setting application parameters or rather by "playing" with the values, it is possible to discover possibilities and limitations of the respective combination.

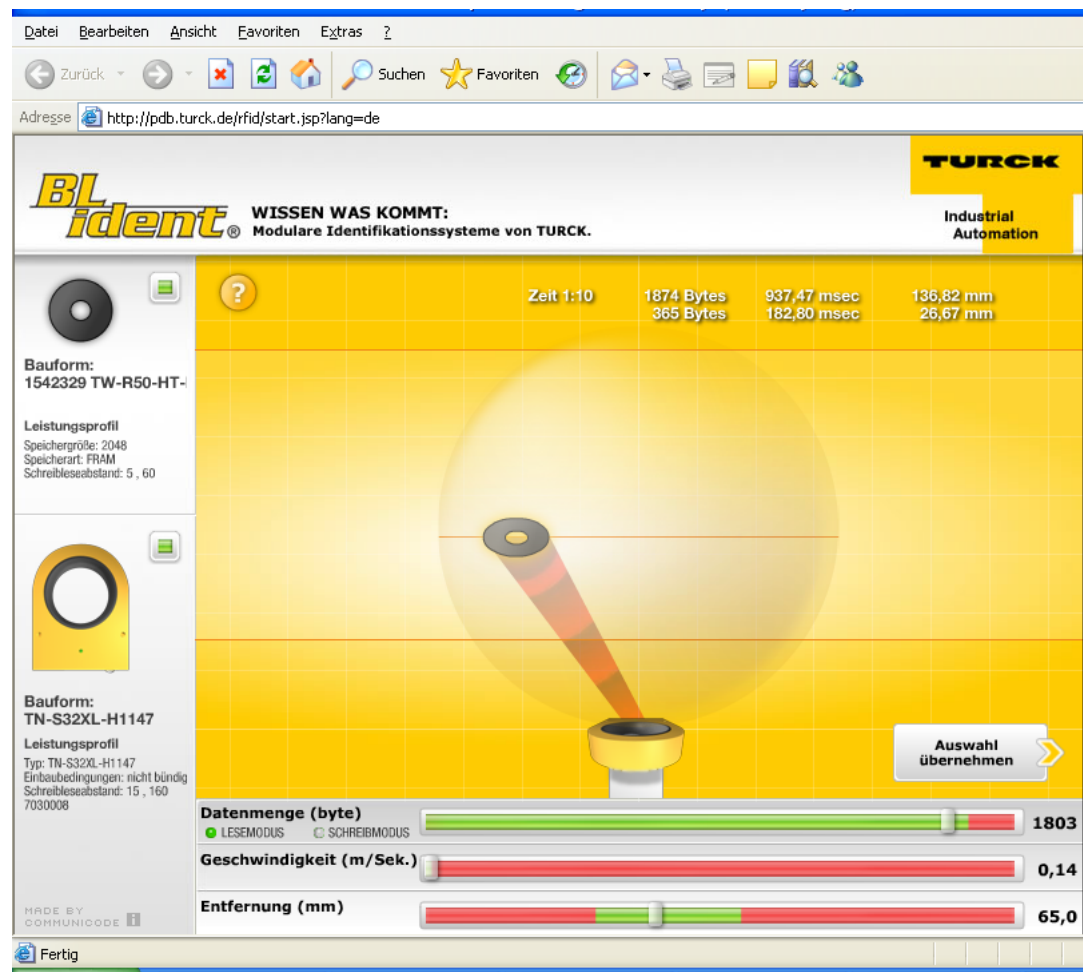
The online version of the simulator (gratis online at <http://www.turck.com...>) is based on data in the Turck product database and therefore always provides the most current data. Next to the simulation of the application, the simulator also creates the respective data sheets or rather the documentation.



Note

The maximum read/write distance and the length of the transmission range only represent typical values under laboratory conditions. The reachable distances can vary up to 30% because of component tolerances, installation issues involving the application, environmental conditions, and interference caused by materials (especially metals). This is why it is absolutely necessary to test the application (especially when the read/write functions are active). In addition, the recommended distance between data carrier and read/write head should be observed if at all possible in order to reach perfect read/write processes despite potential distance variations.

Figure 9:
BL ident®-
Simulator

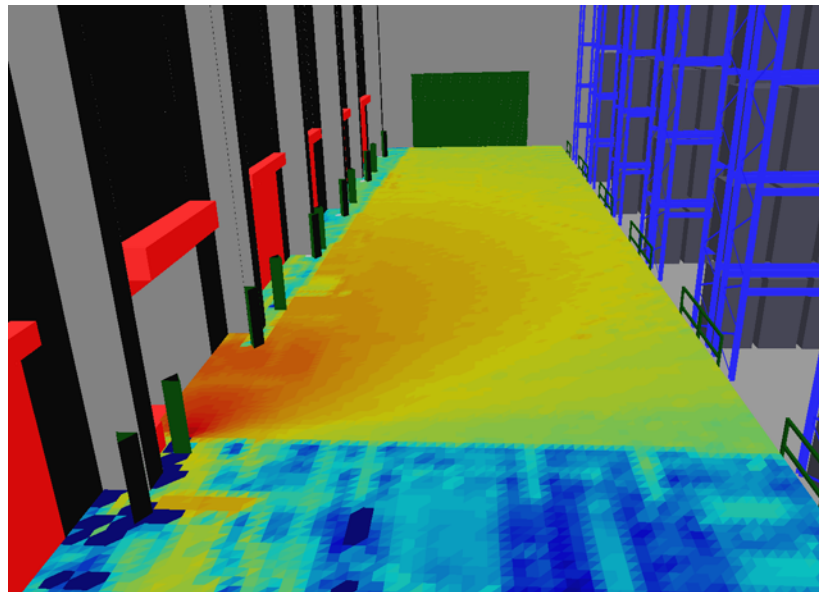


2.7.3 BL ident®-Simulator for UHF-RFID (Ray-Tracer)

Ray-Tracer is a simulation software which is suitable to test different UHF-RFID-system constellations for functionality under practical marginal conditions. 3-dimensional computer models of RFID application environments and algorithms to calculate spacial radio proliferation are used to realistically simulate the operation of UHF-RFID-systems.

Thus the execution of different simulation-cycles allows to limit and pre-select suitable system components prior to the actual UHF-RFID hardware installation. With complex, spatial application environments, the Ray-Tracer also analyzes the technical feasibility of the UHF-RFID radio applications for a respective, preset spatial infrastructure.

Figure 10:
Application environment with evaluation of the spatial field strength distribution when a UHF-RFID read portal is in operation.



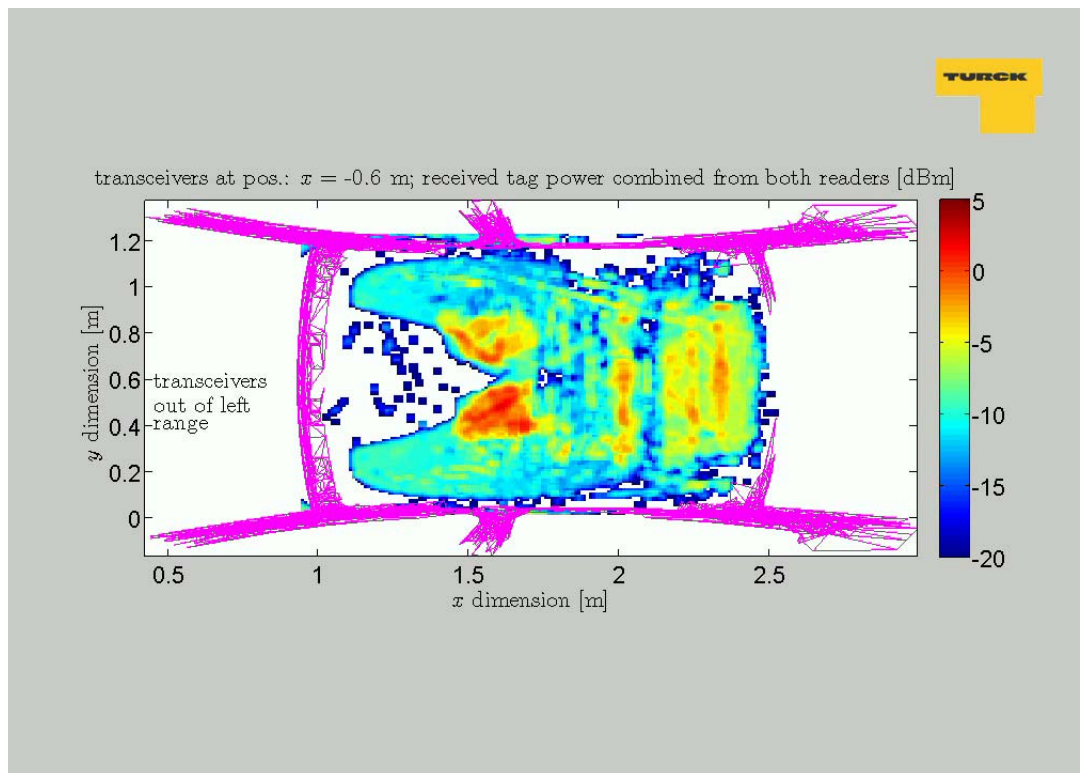
All essential physical effects that are connected to the expansion of radio waves are taken into consideration. Here are examples: Damping characteristics in air and other media (hindrances), reflexion and transmission characteristics on/with objects made of different materials, polarization characteristics, antennas characteristics and gain from read/write units and data carriers.

Ray-Tracer operation requires a high degree of technical know-how and professional training; this is why TURCK-RFID specialists or rather their system partners will conduct customer-specific simulations upon request.

Each simulation is based on concrete spatial environmental conditions of the application; this is why each simulation process is always customer-specific and will deliver customized results for the application's respective location. The explanatory power of these simulation results is often as good as to those gained from real series of measurements conducted onsite, significantly reducing time and costs. Generally accepted or rather transferable statements can not be made based on changing physical locations depending on application.

However, Ray-Tracer simulations are best suitable to significantly speed up system planning and analysis of UHF-RFID-systems by taking under consideration customer-specific application conditions.

Figure 11:
Example of a Ray-
Tracer field
strength-
simulation within a
production line



2.8 Compatibility

All technical data refer to the *BL ident*®-system; this means to the combination of *BL ident*® data carriers, read/write heads, and interface modules. Totally different values may be valid for data carriers of other manufacturers.

2.9 Application examples:

The performance characteristics described in the previous chapter support the utilization of a TURCK *BL ident*®-system in the following industries:

- Automobile
- Transportation and Handling
- Machine Building
- Food and Beverage
- Chemistry
- Pharmacy and Petrochemistry

Utilization in all areas is possible, like:

- Assembly Line
- Materials Handling
- Industrial Manufacturing
- Storage
- Logistics
- Distribution
- Consignment
- Transportation Logistics

3 *BL ident*®-System planning

3.1	Selection criteria for data carriers, read/write heads, and interface module	2
3.2	Transmission range and read/write distance.....	2
3.2.1	Length of the HF transmission range L_{sr} and width offset.....	3
3.2.2	Minimum distance of data carrier to read/write head.....	3
3.2.3	Permissible moving direction and alignment of data carriers.....	3
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3.1 Selection criteria for data carriers, read/write heads, and interface module

In order to select the correct *BL ident*®-system components, the individual case should be evaluated per the following criteria:

- Mechanical dimensions
- Distance of data carriers to read/write heads during read/write operation
- Tolerances of mechanical guide
- Static and/or dynamic transmission of data
- Data volume to be transmitted
- Speed of dynamic read/write operation (on the fly)
- Metal-free areas with data carriers and read/write heads
- Environmental conditions like humidity, temperature, and chemical influences, etc.

The selection criteria for read/write heads are especially valid here:

- Mechanical dimensions
- Required transmission range
- Size of the used data carrier

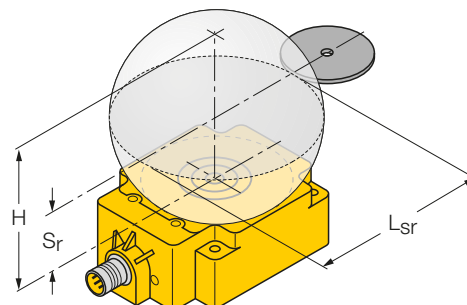
The following criteria should be especially taken into consideration when utilizing interface-modules:

- Protection class
- Bus type
- Number of channels

3.2 Transmission range and read/write distance

The read/write head creates an inductive alternating field in the HF-band. The characteristics of an emitted, electromagnetic wave are exploited with UHF. The recommended read/write distance is based on the data carrier and read/write head combination that was chosen. With HF the distribution of this field depends on the type of antennas in the data carrier and in the read/write head; with UHF also on the configuration and type of spatial environment (e.g. reflecting hindrances).

Figure 12:
Transmission range
in HF-band



Data exchange is only possible within the transmission range. In the HF-band the parameters L_{sr} = length of the transmission range and S_r = recommended read/write distance serve to more accurately quantize the transmission range („Figure 12: Transmission range in HF-band“). The transmission range width has decreased with increasing distance between data carrier and read/write head; at the distance threshold H it has shrunk to a period, this means that with increasing distance less data can be transmitted or rather the speed with which the data carrier moves by the read/write head must be decreased.

3.2.1 Length of the HF transmission range L_{Sr} and width offset

**Note**

This behavior can be simulated with the help of the *BL ident*®-Simulator at www.turck.com.

The length of the transmission range L_{Sr} („Figure 12: Transmission range in HF-band“) depends on the data carrier and read/write head combination that was chosen.

The width offset is especially important for the tolerance of mechanical tracking.

**Note**

The *BL ident*®-Simulator at www.turck.com provides a graphic display of this interdependence.

3.2.2 Minimum distance of data carrier to read/write head

**Note**

With *BL ident*® a minimum distance between data carrier and read/write head is not needed.

3.2.3 Permissible moving direction and alignment of data carriers

The data carriers may move over the read/write heads from any direction. The data carriers should be aligned parallel to the read/write head.

3.2.4 Read/write operation in the static operating mode with HF

In the static operating mode a data exchange is possible up to the distance threshold H („Figure 12: Transmission range in HF-band“). The data carrier should be exactly positioned above the read/write head.

3.2.5 Read and write in the dynamic operating mode (on the fly)

In the dynamic operating mode the data carrier moves by the read/write head. Data exchange is only possible within the transmission range.

3.2.6 Dwell period of the data carrier T_d

The dwell time T_d is the time the data carrier remains in the transmission range of the read/write head when moving by it. During this time the read/write head can exchange data with the data carrier.

The dwell time T_d is calculated as follows:

$$T_d = L_{Sr} / V_{Tag}$$

with:

L_{Sr} : Length of the continuously proceeding transmission range

V_{Tag} : Speed of data carrier in the dynamic operating mode

In the static operating mode the dwell time is as long as needed. The dwell time must be long enough to ensure that communication with the data carrier has been completed.

In the dynamic operating mode the dwell time is defined by the system environment. The dwell time must be matched to the data volume to be transmitted. This means the shorter the dwell time, the smaller the volume of data to be transmitted.



Note

With the *BL ident*®-Simulator at www.turck.com you may view different HF-band examples for this subject.

3.2.7 Calculation of the maximum number of user data in the dynamic operating mode with HF and use of a single data carrier

The calculation of the maximum number of user data depends on the data carrier and read/write head that were chosen.

Example:

The transport system moves the pallettes with the transponders with a maximum speed of $V_{TAG} = 1.0 \text{ m/s}$ (dynamic operating mode).

The following RFID components were selected:

Read/write heads TB-M18-H1147,
data carriers: TW-R30-K2

L = Length of the transmission range

1. Calculate dwell time of the transponder:

■ $t_v = L / V_{TAG} = 0.018 \text{ m} / 1.0 \text{ m/s} = 0.018 \text{ s} = 18 \text{ ms}$

2. Calculate maximum user data (n_{max}) for read operation:

■ Read: $t_v / t_{Byte} = 18 \text{ ms} / 0.5 \text{ ms} = 36 \text{ byte} \Rightarrow n_{max} = 36 \text{ byte}$

When the transponder moves by a maximum 36 byte can be read.



Note

With the *BL ident*®-Simulator at www.turck.com different dynamic operating modes can be simulated and thus explained.

3.2.8 Minimum distance between two adjacent data carriers in stand-alone operating mode

The minimum distance between two data carriers depends on the size of the transmission range.

In the dynamic operating mode (on the fly) the minimum distance between successive data carriers continues to depend on the data volume and the bus cycle time.



Note

Respective tests to determine minimum distance of successive data carriers are to be conducted prior to start-up.

3.2.9 Minimum distance between two adjacent data carriers in multi-access operating mode

If multiple data carriers within the transmission range are to be accessed (so-called pulk processing), the distance between the individual data carriers should be as large as possible. If the data carriers are too close together, successful communication within the air interface cannot always be guaranteed.



Note

A function test under existing conditions of the application will provide information about expected performance.

4	Installation guidelines	
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4.1 Overview

Because of the inductive mode of operation of the data carrier and read/write head every type of metal (especially iron and ferromagnetic materials) should be avoided in the proximity of these devices, as they will interfere with the mode of operation.

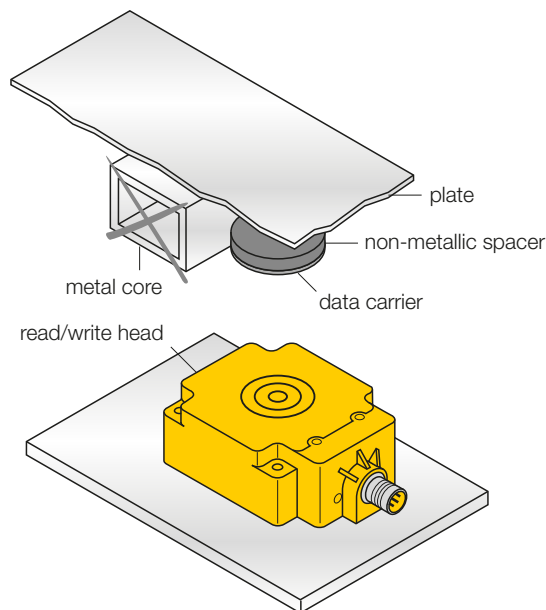
This is why some important points should be taken into consideration during project planning and installation.

- Minimum distance between read/write heads
- Minimum distance between two adjacent data carriers
- Metal-free space when mounting read/write heads and data carriers on metal
- Mounting of several read/write heads on metal frames or metal carriers

4.2 Minimizing interferences caused by metal

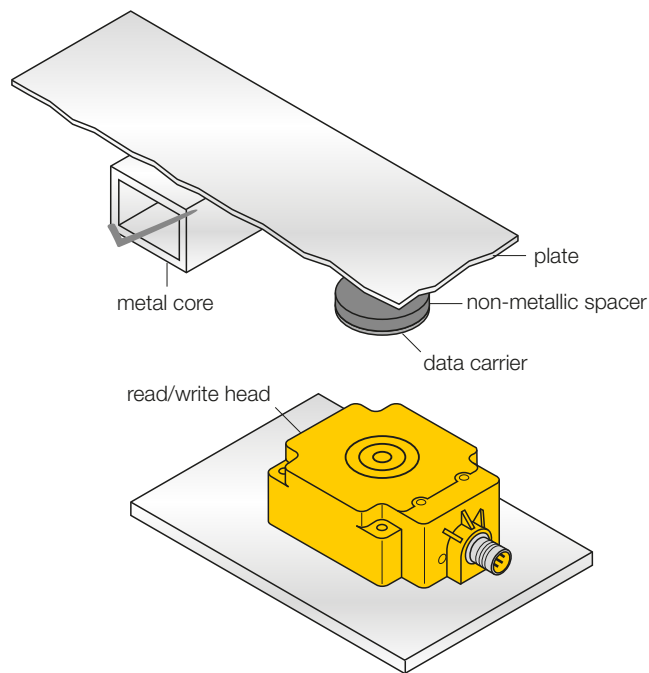
Problem: A metal carrier is located above the transmission range of the read/write head. The metal carrier interferes with the entire field. Especially the transmission range between read/write head and data carrier is decreased („[Figure 13: Interfering metal carriers](#)“).

Figure 13:
Interfering metal
carriers



Solution: Mount the data carriers differently, thus avoiding any interference with the transmission range („Figure 14: Different arrangement of the data carrier”).

Figure 14:
Different
arrangement of the
data carrier



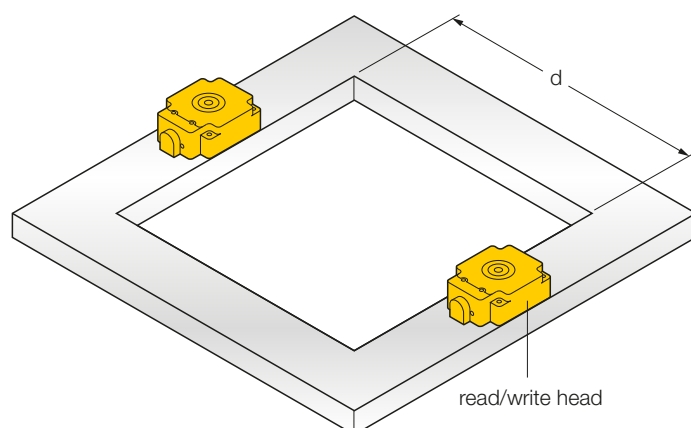
4.3 Mounting of several read/write heads on metal frames or metal carriers

Each read/write head which is mounted on metal couples part of the field onto the metal carrier. If the minimum distance d and the metal-free spaces are observed, there will be, in general, no mutual interference. However, if a metal frame has an unfavorable design, interference is still possible. The result will be longer data transmission times or rather error messages in the interface module.

Problem: Mutual interference of read/write heads

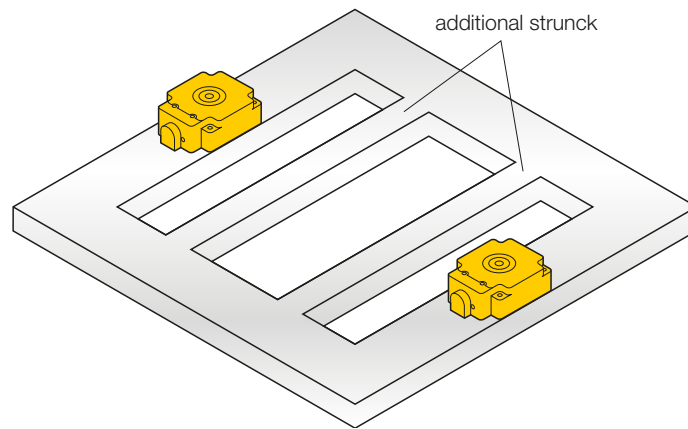
Solution 1: Enlarge the distance d between both read/write heads („Figure 15: Increasing the distance”).

Figure 15:
Increasing the
distance



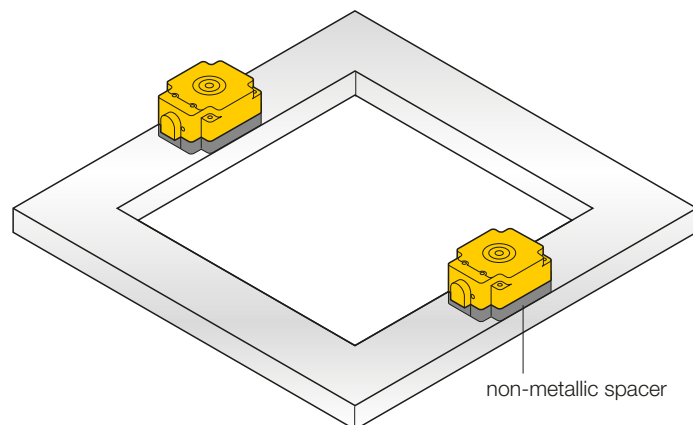
Solution 2: Affix one or several iron rods to short-circuit the parasitic fields („Figure 16: Installing additional strunks”).

Figure 16:
Installing
additional strunks



Solution 3: Place a non-metallic spacer piece of 20 to 40 mm thickness between read/write head and iron rod. Thus the parasitic coupling of the field onto the carrier is significantly minimized.(„Figure 17: Positioning a non-metallic spacer”).

Figure 17:
Positioning a non-
metallic spacer



Solution 4: It is also possible to contact the read/write heads via function block (SPS) and to use it to switch them on and off. The interference through another read/write head can be avoided by using the selective mode; in this mode, only the channel is active where the data carrier is positioned in its transmission window. Please refer to the user guide *BL ident*®-Proxy-Ident-Block (PIB), D101578). Thus the adjacent read/write head does not signal a field and there is no mutual interference.

4.4 No mounting of data carriers on metal

The data carriers (with exception of especially designed data carriers) may not be mounted on metal. Non-metallic spacers (please refer to [Chapter 9, Accessories](#)) allow mounting which does not lead to an interruption of functions („[Figure 18: Installation with non-metallic spacers](#)”).

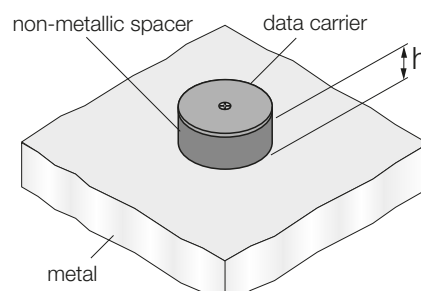
Nevertheless, the reachable read/write distance will be decreased!.



Note

Tests under realistic conditions must be conducted!

Figure 18:
Installation with
non-metallic
spacers

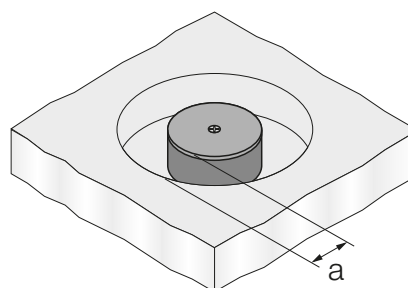


The data carriers must be installed in such a way that the minimum distance requirements between the metal and around the data carrier are met. This minimum distance depends on the design of the read/write head; an assumed guideline is that $a = 10\text{ mm}$ around the data carrier („[Figure 19: Installation while observing the minimum distance to metal](#)”).

Nevertheless, the reachable read/write distance will be decreased!

Some data carriers are designed in such a way that they can be mounted on metal without needing to take additional measures.

Figure 19:
Installation while
observing the
minimum distance
to metal



4.5 Upshot – Transmission range interference caused by metal

The following points should be observed when installing *BL ident*-components:

- Do not mount data carriers (except especially designed data carriers) on metal or use suitable accessories (distance disks).
- Please ensure that no metal rod (or similar) intersects with the transmission range. The metal rod would interfere with the field data.
- Only use plastic screws to affix the read/write heads and data carriers.

5 EMC guidelines

5.1	Who should use these EMC guidelines?	2
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5.4	Coupling distances	3
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5.1 Who should use these EMC guidelines?

These EMC guidelines are for:

- Project engineers who plan installations with RFID-components which need to be configured.
- Assemblers, operators, service technicians, and engineers who professionally install connection cables according to specifications or who will need to fix existing errors caused by interferences.

You may read more about EMC guidelines in this chapter, especially:

- Propagation of an electromagnetic interference
- What does EMC mean?
- Basic rules for safeguarding EMC
- Assembly of a switching cabinet
- Avoiding sources of interference
- Potential equalization
- Shielding of cables

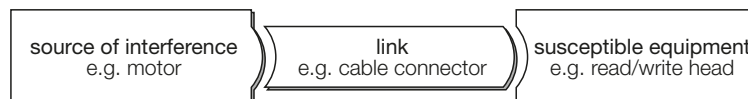
5.2 Propagation of an electromagnetic interference

Electromagnetic interference in an installation can only occur when the following components are present:

- Source of interference
- Link
- Susceptible equipment

If one of these components is missing (e.g. the coupling distance), no interference will occur even when the source of interference is sending strong jamming signals („Figure 20: Interference components“):

Figure 20:
Interference
components



The measurements for avoiding interference (EMC) are suitable in connection with all three components. When assembling a system, the manufacturer is obligated to implement all possible measures to prevent the creation of a source of interference.

The system must be assembled in such a way that the mutual interference of single components can not occur or is kept to a minimum.

5.3 What can interfere with RFID?

- Problem: Irradiation interference via a power supply line when switching power supply components are used.
Solution: Use a controlled switching power supply component.
- Problem: Parasitic induction via the serial connection cable.
Solution: Use better cable shield and/or ground read/write head.
- HF-interference via the antenna, another read/write head, or inter-system interference with the same frequency range.
Solution: Interference caused by another read/write head can be avoided with the help of the selective mode (please refer to manual *BL ident* Proxy-Ident-Block (PIB), D101578).

5.4 Coupling distances

There are four types of parasitic induction:

- Galvanic coupling distance
- Capacitive coupling distance
- Inductive coupling distance
- Irradiation coupling

There are different causes for the interference of coupling distances:

Cables and cable assemblies:

- Incorrect or unfavorable installation
- Missing or incorrectly connected shield
- Unfavorable spatial layout of cable

With switching cabinet or enclosure:

- Missing or incorrectly wired potential equalization line
- Missing or incorrect grounding
- Unfavorable spatial layout
- Loosely mounted assemblies
- Unfavorable switching cabinet installation

5.5 What does EMC mean?

More and more interferences are impacting electronic components of an installation because of increasing density of component population, added switched power electronics, and increasing switching speeds. The following is valid here: The higher the level of automation, the higher the danger of mutual interference.

Definition of EMC:

"Electromagnetic Compatibility" is the ability of an electrical or electronic device to function free of errors within an electromagnetic environment without interfering with the environment beyond certain thresholds.

The TURCK *BL ident*-devices are tested for EMC per the following basic norms:

- EN 61000-4-2 (ESD)
- EN 61000-4-3 (electromagnetic fields)
- EN 61000-4-4 (burst)
- EN 61000-4-5 (surge)
- EN 61000-4-6 (conducted HF)

An installation must be assembled per certain guidelines because RFID-components are components of an entire system, and the combination of different components may cause interference.

An entire package of measures must be implemented in order to have an interference-free installation; here, the operator is responsible for radio shielding of the entire installation. The operator must also comply to country-specific rules and regulations. All measures taken when the installation is being assembled will later save expensive retrofitting and elimination of interference.

5.6 Basic rules for safeguarding EMC

These basic rules are to be followed to ensure electromagnetic compatibility (EMC):

■ Shielding via housing

Please protect the device from external interference by installing it into a cabinet or housing it in an enclosure. The cabinet or the enclosure must be part of the ground connection.

Please use insulating plates to shield the device from electromagnetic field induction.

Please use metallic connector housings for shielded data transmission cables.

■ Laminar earth connection

Please connect all inactive metal parts in a way that is HF low resistive and covers a large area. Please establish a connection that covers a large area between the inactive metal parts and the central ground point.

Integrate the shield ground into the mass lead, this means the shield earth must be connected with mass in a way that covers a large area.

■ Designing the cable layout

Divide the cables into cable groups and install them separately.

Always install high-voltage cables and data transfer cables in separate channels or bundles.

Always guide the entire cabling from one direction and if possible, in one layer into the cabinet.

Guide the data transfer cables closely alongside earth surfaces.

Twist conductor ends of separately installed conductors.

In many cases there must be a separate layout for the bus cable. Ideally, the bus cable should serve as a reference for installing the data transfer cable between read/write heads and interface modules.

■ Shielding of cables

Affix the shield on both sides of the data transfer cable.

Affix the shield on one side of the analog cable, e.g. on the propulsion device.

Always place the cable shields onto the shield rail at the cabinet entry in a way that covers a large area and affix them with clamps so that they remain conductive.

Continue the affixed shield to the assembly in one stretch.

Use braids instead of foil.

■ Line- and signal filter

Only use line filters with metal housings.

Connect the filter housing with the cabinet earth in a laminar and HF low ohmic way.

Never affix the filter housings to coated surfaces.

Affix filters at the switching cabinet entry or in the direction of the source of interference.

5.6.1 Assembly of a switching cabinet

Metal housings keep magnetic and electrical fields, as well as electromagnetic waves away from the susceptible device. The better the induced interference current can flow, the more the interference field will weaken itself. This is why it must be ensured that all housing panels are connected to each other in a way that allows excellent conduction.

If the switching cabinet panels are isolated from each other, a HF-conducting connection can be established with ribbon cables and HF-clamps or HF-paste (the more extensive the connection, the better it is).

Interferences can also be avoided with optimum assembly of the switching cabinet. The following is valid here:

- The effects of the interference decreases with increasing distance between the source of the interference and the susceptible device.
- An additional decrease of the interference can be reached by installing shrouds.
- Signal lines should have a minimum distance of 10 cm to high voltage cables or load power cables.

External interference via the grid are avoided by installing line filters. Here, the line filter should be correctly dimensioned and it should be directly affixed at the switching cabinet entry.

5.6.2 Avoiding sources of interference

Avoid the installation of sources of interference which occur primarily with switched inductances.

Interferences are created primarily by relay, gate, fluorescent lamps inside the switching cabinet and valves; the interference is prevented by using RC-combinations, recovery diodes, etc. This also avoids inductive interspersions into cables which are installed parallel to the coiled cables.

5.6.3 Potential equalization

If the system parts are assembled in different ways and if different voltage levels are present, potential differences may result between system parts. Equalization currents then flow across signal lines (potential equalization should not be confused with protective earth).

This is why potential equalization per specifications is essential.

The following points should be observed here:

- The potential equalization line must have an adequate diameter (min. 10 mm²).
- The distance between signal line and corresponding potential equalization line must be as short as possible.
- A cable with fine wires must be used.
- If the potential equalization lines are connected to the central potential equalization rail, line components and non-line components must be combined.

5.6.4 Shielding of cables

Signal lines must be shielded to avoid interference. The best shield is created when signal lines are installed inside steel pipes, however, in most cases, cables with braided shields are adequate. The correct connection is the decisive factor for shield effectiveness in both cases because a non-connected or incorrectly connected shield has no shield effectiveness.

The following must be observed:

- Interference signals are often found in the range of > 10 kHz, and this is why an extensive shield connection is needed.
- The shield rail has excellent conductivity and must be connected to the switching cabinet so that a large surface is covered; the shield rail must be as close as possible to the cable entry. The insulation must be stripped off the cable; the stripped cable must be connected to the shield rail with HF-clamps or cable clips.
- The shield rail must be connected to the PE-rail.
- If shielded cables must be disrupted, the shield must be continued via the respective connector housings of suitable connectors.
- If adapter plugs without a suitable shield connection are used, the shield must be continued by cable clamps at the location of the disruption.

6 *BL ident*[®] – Data carriers for the HF-band

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6.1.1	Memory component	2
6.1.2	Data carrier electronics	2
6.1.3	Data carrier antenna.....	2
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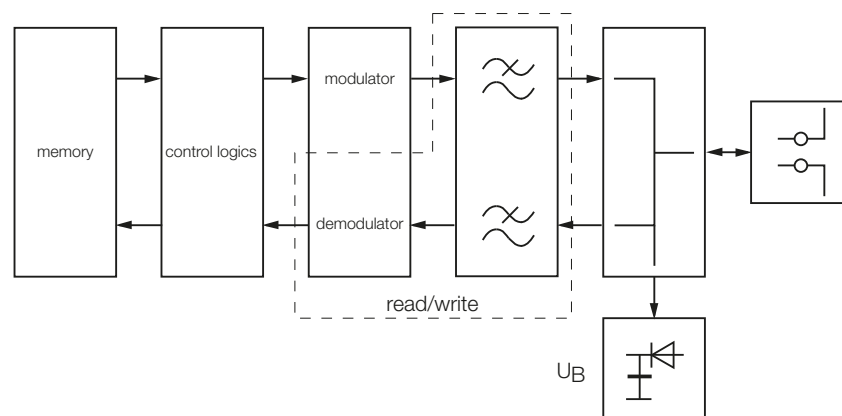
6.1 Functionality

The *BL ident*® data carriers (TAGs) can be read from and written to contactless with the respective read/write heads. The operating frequency in the HF-band is 13.56 MHz.

The data carriers are passive, this means they have no battery. When the data carriers move into the transmission range of a read/write head, energy is inductively coupled in and data transfer is initiated.

Attainable distances vary depending on the size of individual designs. Designs are available as EEPROM or FRAM memory versions. The *BL ident*® data carrier consists of a memory component, an electronic system, and an antenna („Figure 21: Block switching diagram data carrier“).

Figure 21:
Block switching
diagram data
carrier



6.1.1 Memory component

The information on the data carrier can be read – but new data can be added as well (read/write). The memory size is 64 Byte, 128 Byte, 2 kByte, or 8 Byte.

The memory component has the following alternative components:

- EEPROM: Unlimited reading but limited write-cycles (10^5) possible. No battery needed
- FRAM = Ferroelectric memory: Unlimited reading but almost unlimited write-cycles (10^{10}) possible. No battery needed

Data maintenance time of the memory:

- 1 year at 85 °C,
- 10 years at 55 °C,
- 120 years at 25 °C,

Electrical fields have no impact because they normally have too low of a frequency to delete the memory.

6.1.2 Data carrier electronics

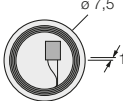
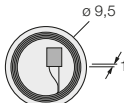
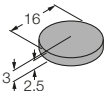
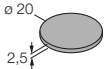
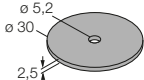
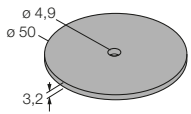
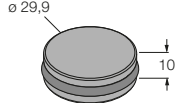
The electronic system ensures the communication on both sides of the data carrier with the help of the read/write head.

6.1.3 Data carrier antenna

The antenna serves to transfer data and energy between data carrier and read/write head.

6.2 Overview of data carrier model types

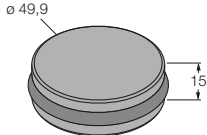
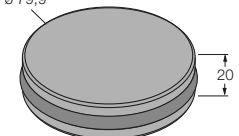
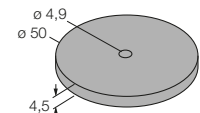
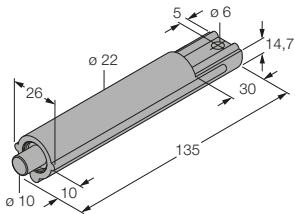
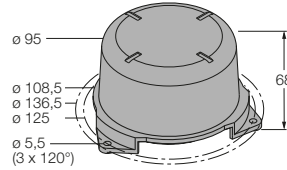
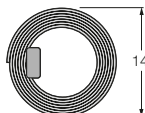
Table 9:
Overview of data
carrier model
types

Dimensions/enclosure length	Memory size [Byte]	Memory	Operating temperature [° C]	Characteristics	Type code
	128	EEPROM	-25...+70	Small design	TW-R7.5-B128
	128	EEPROM	-25...+70	Small design	TW-R9.5-B128
	64	EEPROM	-25...+85	Expanded storage temperature range	TW-R16-B64
	128	EEPROM			TW-R16-B128
	128	EEPROM			ATEX TW-R16-B128-Ex²
	128	EEPROM	-25...+85	Standard	TW-R20-B128
	128	EEPROM		ATEX	TW-R20-B128-Ex²
	2 k	FRAM		Standard	TW-R20-K2
	2 k	FRAM		ATEX	TW-R20-K2-Ex²
	128	EEPROM	-25...+85	Standard	TW-R30-B128
	128	EEPROM		ATEX	TW-R30-B128-Ex²
	2 k	FRAM		Standard	TW-R30-K2
	2 k	FRAM		ATEX	TW-R30-K2-Ex²
	128	EEPROM	-25...+85	Standard	TW-R50-B128
	128	EEPROM		ATEX	TW-R50-B128-Ex²
	2 k	FRAM		Standard	TW-R50-K2
	2 k	FRAM		ATEX	TW-R50-K2-Ex²
	8 k	FRAM		Standard	TW-R50-K8
	8 k	FRAM		ATEX	TW-R50-K8-Ex²
	128	EEPROM	-25...+85	Standard	TW-R30-M-B128¹
	2 k	FRAM			TW-R30-M-K2¹

¹ accessories needed where applicable

² II 2 G Ex ia IIC T4/T6, II 2 D Ex ia D 21 T 110 °C

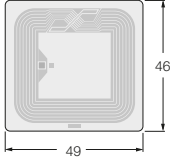
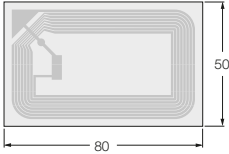
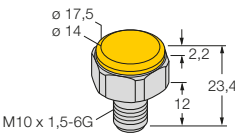
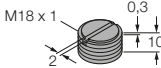
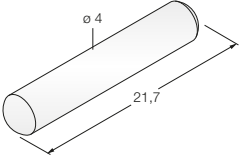
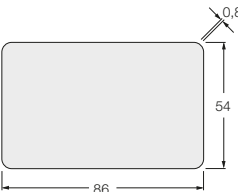
Table 9:
Overview of data
carrier model
types

Dimensions/enclosure length	Memory size [Byte]	Memory	Operating temperature [° C]	Characteristics	Type code
	128	EEPROM	-25...+85	Direct mounting on metal	TW-R50-M-B128¹
	2 k	FRAM			TW-R50-M-K2¹
	128	EEPROM	-25...+85	Direct mounting on metal	TW-R80-M-B128¹
	2 k	FRAM			TW-R80-M-K2¹
	2 k	FRAM	-25...+85	Direct mounting on metal	TW-R50-MF-K2¹
	2k	FRAM			TW-R50-MF-K2-Ex¹³
	64	EEPROM	-40...+210 30 min.	High temperature range	TW-R22-HT-B64²
	128	EEPROM	-40...+210 30 min.	High temperature range	TW-R50-90-HT-B128²
	2 k	FRAM	-40...+210 30 min.	High temperature range	TW-R50-90-HT-K2²
	128	EEPROM	-25...+85	Inlay	TW-I14-B128

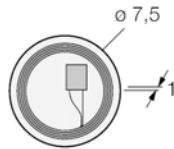
¹ accessories needed where applicable ² please refer to data sheet for additional information

³ II 2 G Ex ia IIC T4/T6, II 2 D Ex ia D 21 T 110 °C

Table 9:
Overview of data
carrier model
types

Dimensions/enclosure length	Memory size [Byte]	Memory	Operating temperature [° C]	Characteristics	Type code
	128	EEPROM	-25...+70	Smart label (foil)	TW-L49-46-F-B128
	128	EEPROM	-25...+70	Smart label (Paper) ³	TW-L80-50-P-B128
	128	EEPROM	-25...+85	Screw design	TW-BD10X1.5-19-B128
	2 k	FRAM			TW-BD10X1.5-19-K2
	128	EEPROM			TW-BS10X1.5-19-B128
	2 k	FRAM			TW-BS10X1.5-19-K2
	128	EEPROM			TW-BV10X1.5-19-B128
	2 k	FRAM			TW-BV10X1.5-19-K2
	128	EEPROM	-25...+85	Suitable for autoclaves	TW-SPP18x1-B128
	128	EEPROM	-25...+85	Glass data carriers	TW-R4-22-B128
	128	EEPROM	-25...+50	Check card design	TW-L86-54-C-B128

³ also printed if desired



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

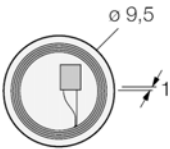
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R7.5-B128
Ident-No.	7030231
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-40...+85 °C
Design	R7.5
Housing material	Plastic, epoxy
Material active face	Plastic, Epoxy
Protection class	IP68
Packaged quantity	100



Type	TW-R9.5-B128
Ident-No.	7030252
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-40...+85 °C
Design	R9.5
Housing material	Plastic, epoxy
Material active face	Plastic, epoxy
Protection class	IP68
Packaged quantity	100

- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

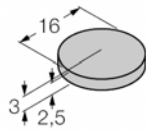
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM, memory size 64 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

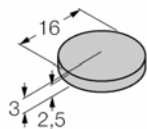
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R16-B64
Ident-No.	6901346
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SL1
Memory size	64 byte
Memory	read/write
Freely usable memory	46 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-25...+120 °C 160 °C, 1x35 h 220 °C, 1x30 s
Design	R16
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R16-B128



Type	TW-R16-B128
Ident-No.	6900501
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-25...+120 °C 160 °C, 1x35 h 220 °C, 1x30 s
Design	R16
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

- **Mobile data carrier**
- **Read/write**
- **Compatible with a number of BLident read/write heads (see data sheet or compatibility table)**
- **EEPROM memory 128 bytes**

Functional principle

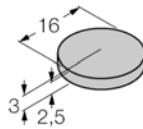
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

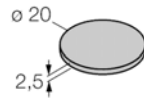
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R16-B128-Ex
Ident-No.	7030241
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-25...+120 °C 160 °C, 1x35 h 220 °C, 1x30 s in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2 G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R16
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R20-B128



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

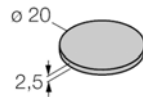
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R20-B128
Ident-No.	6900502
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R20
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

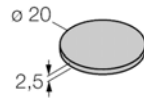
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R20-B128-Ex
Ident-No.	7030242
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
	140 °C, 1x100 h
	in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2 G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R20
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R20-K2



- **Mobile data carrier**
- **Read/write**
- **Compatible with a number of BLident read/write heads (see data sheet or compatibility table)**
- **FRAM, memory size 2 Kbytes**

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

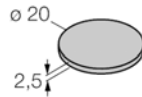
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R20-K2
Ident-No.	6900505
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R20
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

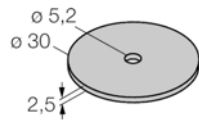
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R20-K2-Ex
Ident-No.	7030245
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R20
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R30-B128



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

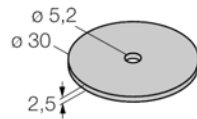
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R30-B128
Ident-No.	6900503
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R30
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

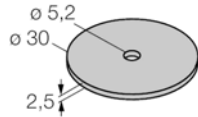
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R30-B128-Ex
Ident-No.	7030243
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
	140 °C, 1x100 h
	in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2 G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R30
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R30-K2



- **Mobile data carrier**
- **Read/write**
- **Compatible with a number of BLident read/write heads (see data sheet or compatibility table)**
- **FRAM, memory size 2 Kbytes**

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

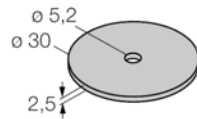
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R30-K2
Ident-No.	6900506
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R30
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

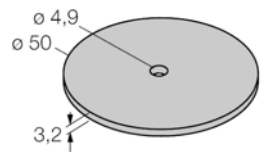
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R30-K2-Ex
Ident-No.	7030246
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
	140 °C, 1x100 h
	in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2 G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R30
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R50-B128



Type	TW-R50-B128
Ident-No.	6900504
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R50
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

- **Mobile data carrier**
- **Read/write**
- **Compatible with a number of BLident read/write heads (see data sheet or compatibility table)**
- **EEPROM memory 128 bytes**

Functional principle

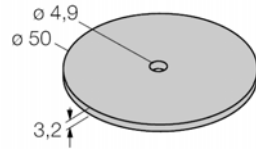
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

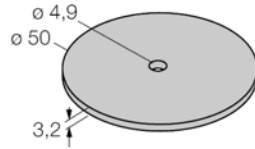
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-B128-Ex
Ident-No.	7030244
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
	140 °C, 1x100 h
	in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2 G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R50
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R50-K2



- **Mobile data carrier**
- **Read/write**
- **Compatible with a number of BLident read/write heads (see data sheet or compatibility table)**
- **FRAM, memory size 2 Kbytes**

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

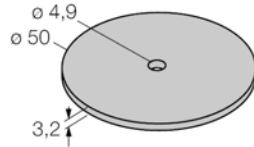
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-K2
Ident-No.	6900507
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R50
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

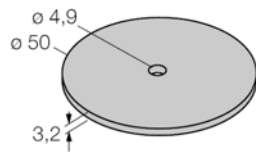
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-K2-Ex
Ident-No.	7030247
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2 G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R50
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R50-K8



Type	TW-R50-K8
Ident-No.	7030233
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Turck TW-**-K8
Memory size	8192 byte
Memory	read/write
Freely usable memory	7936 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693 access only possible with BLident devices
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R50
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

- **Mobile data carrier**
- **Read/write**
- **Compatible with a number of BLident read/write heads (see data sheet or compatibility table)**
- **FRAM memory 8 Kbytes**

Functional principle

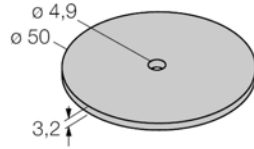
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- FRAM memory 8 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

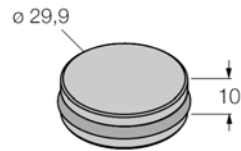
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-K8-Ex
Ident-No.	7030249
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Turck TW**-K8
Memory size	8192 byte
Memory	read/write
Freely usable memory	7936 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693 access only possible with BLident devices
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2 G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R50
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R30-M-B128



- **Mobile data carrier**
- **3 different mounting options in/on metal, incl. accessories**
- **Read/write**
- **EEPROM memory 128 bytes**

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

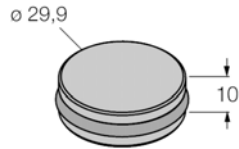
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R30-M-B128
Ident-No.	7030210
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R30
Housing material	Plastic, PET
Material active face	Plastic, black, PET
Protection class	IP68
Packaged quantity	1



- Mobile data carrier
- 3 different mounting options in/on metal, incl. accessories
- Read/write
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

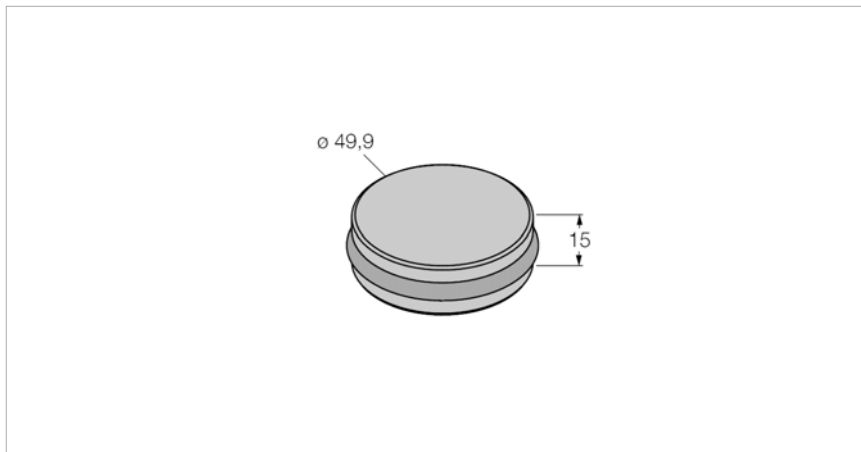
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R30-M-K2
Ident-No.	7030206
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R30
Housing material	Plastic, PET
Material active face	Plastic, black, PET
Protection class	IP68
Packaged quantity	1

TW-R50-M-B128



- **Mobile data carrier**
- **3 different mounting options in/on metal, incl. accessories**
- **Read/write**
- **EEPROM memory 128 bytes**

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

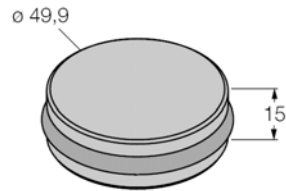
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-M-B128
Ident-No.	7030209
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R50
Housing material	Plastic, PET
Material active face	Plastic, black, PET
Protection class	IP68
Packaged quantity	1



- Mobile data carrier
- 3 different mounting options in/on metal, incl. accessories
- Read/write
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

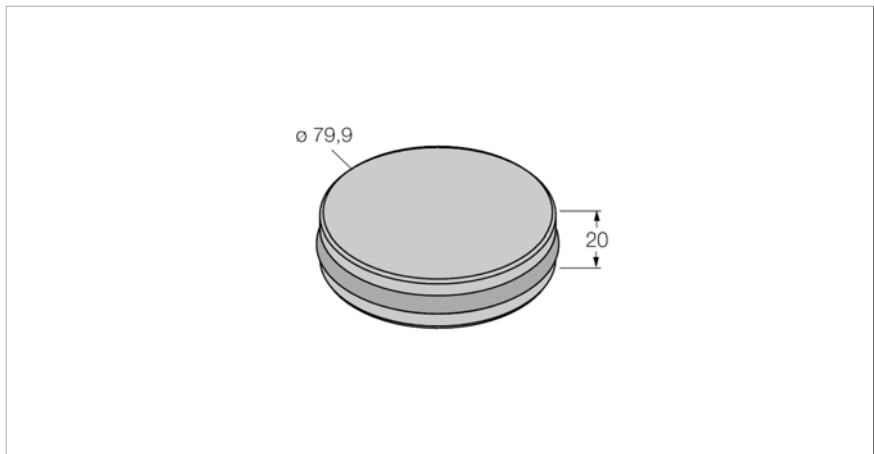
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-M-K2
Ident-No.	7030229
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R50
Housing material	Plastic, PET
Material active face	Plastic, black, PET
Protection class	IP68
Packaged quantity	1

TW-R80-M-B128



Type	TW-R80-M-B128
Ident-No.	7030207
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R80
Housing material	Plastic, PET
Material active face	Plastic, black, PET
Protection class	IP68
Packaged quantity	1

- **Mobile data carrier**
- **3 different mounting options in/on metal, incl. accessories**
- **Read/write**
- **EEPROM memory 128 bytes**

Functional principle

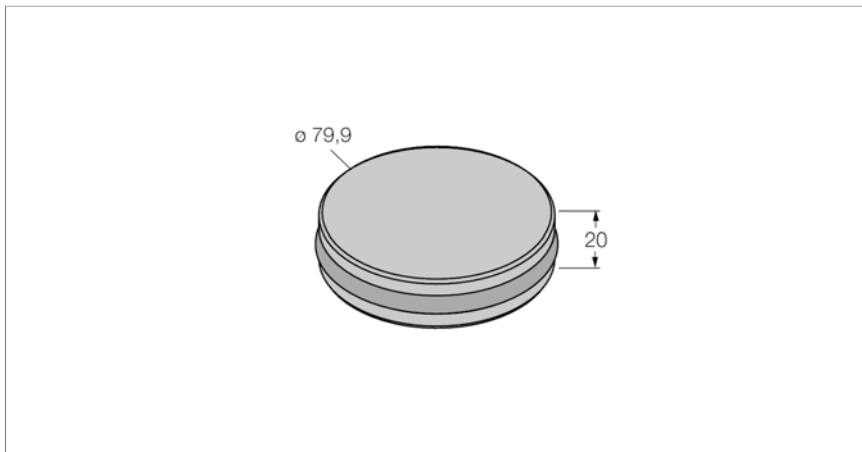
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



- Mobile data carrier
- 3 different mounting options in/on metal, incl. accessories
- Read/write
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

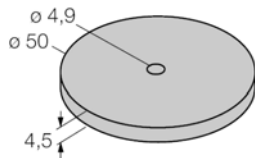
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R80-M-K2
Ident-No.	7030205
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R80
Housing material	Plastic, PET
Material active face	Plastic, black, PET
Protection class	IP68
Packaged quantity	1



- Mobile data carrier
- Read/write
- This data carrier can be mounted in metal (flush), resp. on metal.
- Mount the data carrier such, that the label is readable and faces towards the read/write head.
- Use plastic screws for mounting
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

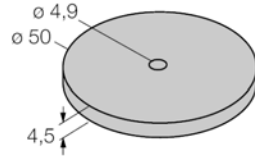
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-MF-K2
Ident-No.	7030232
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0mm
Ambient temperature	-20...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h
Design	R50
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1



- ATEX category II 2 G, Ex Zone 1
- ATEX category II 2 D, Ex Zone 21
- Mobile data carrier
- Read/write
- This data carrier can be mounted in metal (flush), resp. on metal.
- Mount the data carrier such, that the label is readable and faces towards the read/write head.
- Use plastic screws for mounting
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

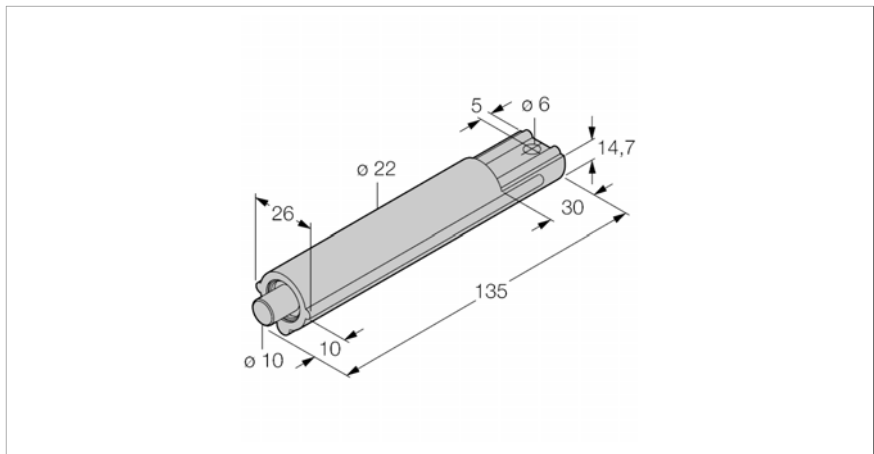
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-MF-K2-Ex
Ident-No.	7030248
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0mm
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C 140 °C, 1x100 h in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 2 G Ex ia IIC T4/T6 II 2D Ex iaD 21 T110°C
Approval acc. to	BVS 09 ATEX E 036 X
Design	R50
Housing material	Plastic, PA6
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R22-HT-B64



Type	TW-R22-HT-B64
Ident-No.	1542323
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SL1
Memory size	64 byte
Memory	read/write
Freely usable memory	46 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-40...+90 °C
Storage temperature	-40...+210 °C, 30 min.
Design	R22 high temperature
Housing material	Plastic, PA6T/6I, MH, 12-190, GF50
Material active face	Plastic, black, PA6
Protection class	IP68
Packaged quantity	1

- Mobile data carrier for high-temperature applications
- Read/write
- It is necessary to run adequate performance tests of the data carriers in the actual temperature processes of the application. Otherwise, durability of the data carriers cannot be guaranteed when exposed outside of the denoted ambient temperature range.
- memory size 64 bytes

Functional principle

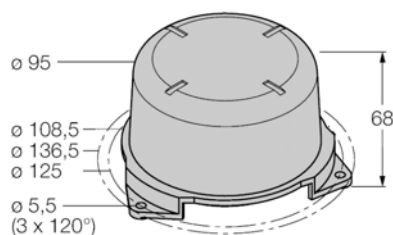
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

TW-R50-90-HT-B128


- Mobile high-temperature data carrier
- Read/write
- It is necessary to run adequate performance tests of the data carriers in the actual temperature processes of the application. Otherwise, durability of the data carriers cannot be guaranteed when exposed outside of the denoted ambient temperature range.
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

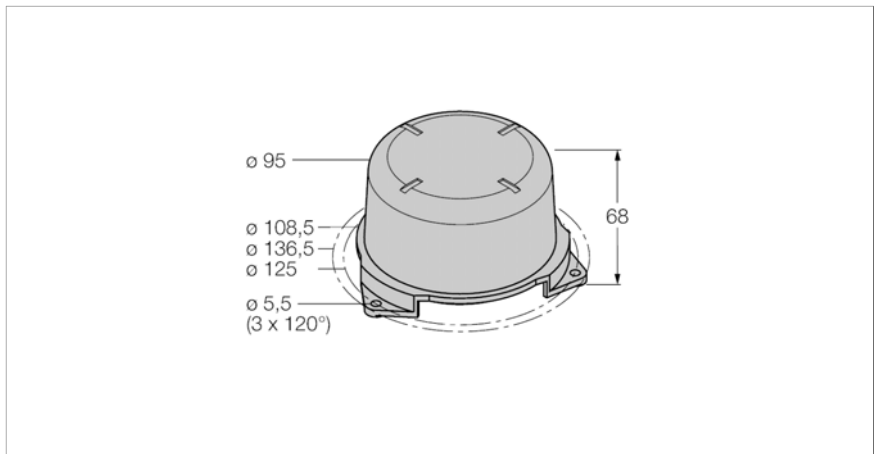
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R50-90-HT-B128
Ident-No.	1542326
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-40...+90 °C
Storage temperature	-40...+210 °C, 30 min.
Design	R50 high-temperature
Housing material	Plastic, PA6T/6I, MH, 12-190, GF50
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

TW-R50-90-HT-K2



Type	TW-R50-90-HT-K2
Ident-No.	1542329
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-40...+90 °C
Storage temperature	-40...+210 °C, 30 min.
Design	R50 high-temperature
Housing material	Plastic, PA6T/6I, MH, 12-190, GF50
Material active face	Plastic, black, PA6
Protection class	IP69K
Packaged quantity	1

- Mobile data carrier for high-temperature applications
- Read/write
- It is necessary to run adequate performance tests of the data carriers in the actual temperature processes of the application. Otherwise, durability of the data carriers cannot be guaranteed when exposed outside of the denoted ambient temperature range.
- FRAM, memory size 2 Kbytes

Functional principle

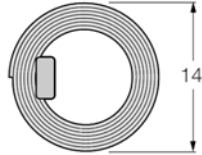
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



- Mobile data carrier
- Inlay design, e.g. for customizing
- Read/write
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

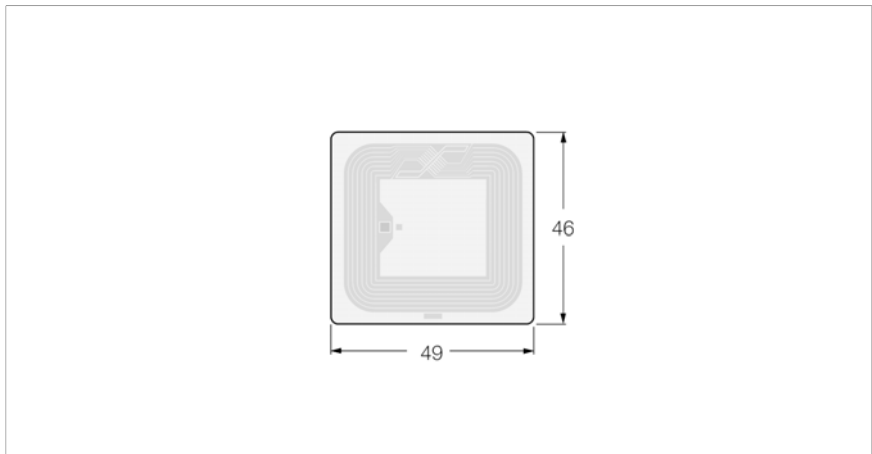
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-I14-B128
Ident-No.	6900526
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-25...+120 °C
	160 °C, 1x35 h
	220 °C, 1x30 s
Design	inlay
Housing material	epoxy
Protection class	IP20
Packaged quantity	1



Type	TW-L49-46-F-B128
Ident-No.	7030390
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-20...+70 °C
Storage temperature	-20...+70 °C
Design	Smart Label
Housing material	Plastic, PET
Material active face	Foil
Protection class	IP40
Packaged quantity	1

- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

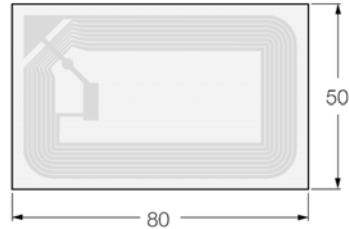
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

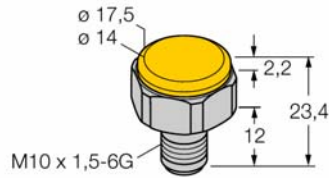
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-L80-50-P-B128
Ident-No.	7030389
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-20...+70 °C
Storage temperature	-20...+70 °C
Design	Smart Label
Housing material	Plastic, PET
Material active face	Paper
Protection class	IP40
Packaged quantity	1

TW-BD10X1.5-19-B128



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

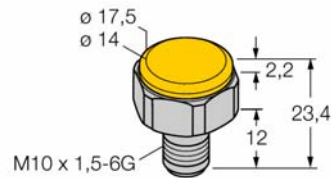
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-BD10X1.5-19-B128
Ident-No.	6901384
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10, screwable into metal
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
Design	BD10x1.5
Housing material	Plastic, POM
Material active face	Plastic, yellow, POM
Protection class	IP68
Packaged quantity	1



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

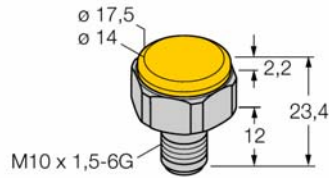
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-BD10X1.5-19-K2
Ident-No.	6901381
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10, Data carrier can be screwed in metal.
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
Design	BD10x1.5
Housing material	Plastic, POM
Material active face	Plastic, yellow
Protection class	IP68
Packaged quantity	1

TW-BS10X1.5-19-B128



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

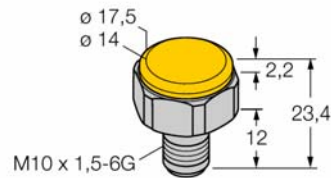
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-BS10X1.5-19-B128
Ident-No.	6901383
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10, Data carrier can be screwed in metal.
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
Design	BS10x1.5
Housing material	Metal/plastic, S235JRG2/LCP
Material active face	Plastic, yellow, LCP-GF30
Protection class	IP68
Packaged quantity	1



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

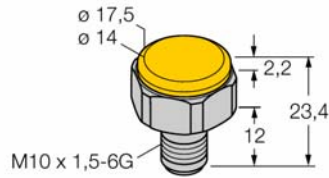
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-BS10X1.5-19-K2
Ident-No.	6901380
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10, Data carrier can be screwed in metal.
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
Design	BS10x1.5
Housing material	Metal/plastic, S235JRG2/LCP
Material active face	Plastic, yellow
Protection class	IP68
Packaged quantity	1



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

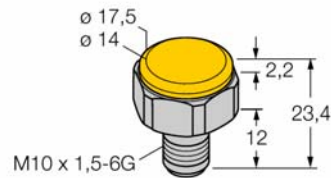
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-BV10X1.5-19-B128
Ident-No.	6901385
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10, Data carrier can be screwed in metal.
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
Design	BV10x1.5
Housing material	Metal/plastic, 1.4401/LCP
Material active face	Plastic, yellow, PA6
Protection class	IP68
Packaged quantity	1



- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- FRAM, memory size 2 Kbytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

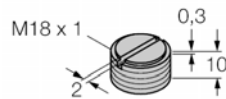
The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-BV10X1.5-19-K2
Ident-No.	6901382
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	FRAM
Chip	Fujitsu MB89R118
Memory size	2048 byte
Memory	read/write
Freely usable memory	2000 byte
Number of read operations	unlimited
Number of write operations	10 ¹⁰
Typical read time	0.5 ms/byte
Typical write time	0.5 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10, Data carrier can be screwed in metal.
Ambient temperature	-25...+85 °C
Storage temperature	-45...+85 °C
Design	BV10x1.5
Housing material	Metal/plastic, 1.4401/LCP
Material active face	Plastic, yellow
Protection class	IP68
Packaged quantity	1

TW-SPP18x1-B128



- **Mobile data carrier**
- **Read/write**
- **Compatible with a number of BLident read/write heads (see data sheet or compatibility table)**
- **EEPROM memory 128 bytes**

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

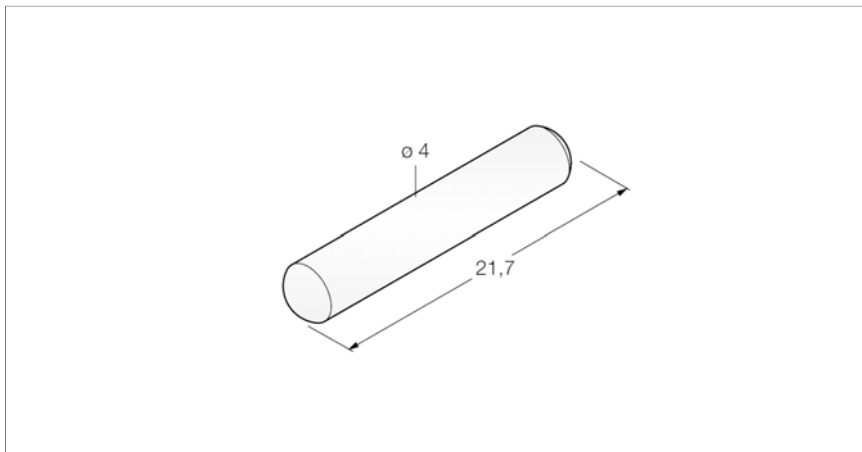
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-SPP18x1-B128
Ident-No.	6901062
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	0, Data carrier can be screwed in metal. The attainable read-write distances have to be determined with tests.
Ambient temperature	-25...+85 °C
Storage temperature	-40...+85 °C
Design	SPP18x1
Housing material	Plastic, PP
Material active face	Plastic, grey, PP
Protection class	IP68
Packaged quantity	1



- Mobile data carrier, for use in auto-claves
- Read/write
- Distances measured with narrow side of data carrier aimed towards the read/write head
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

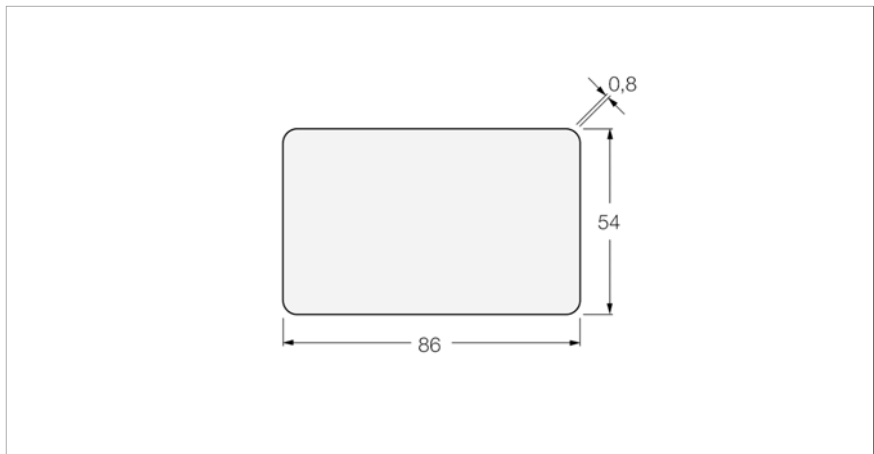
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

Type	TW-R4-22-B128
Ident-No.	7030237
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Ambient temperature	-25...+85 °C
Storage temperature	-40...+140 °C
Design	R4/-22
Housing material	glass
Material active face	Glass
Vibration resistance	200 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68
Static pressure	10 bar
Packaged quantity	1



Type	TW-L86-54-C-B128
Ident-No.	6900479
Data transfer	inductive coupling
Working frequency	13.56 MHz
Memory type	EEPROM
Chip	NXP I-Code SLI/SL2
Memory size	128 byte
Memory	read/write
Freely usable memory	112 byte
Number of read operations	unlimited
Number of write operations	10 ⁵
Typical read time	2 ms/byte
Typical write time	3 ms/byte
Radio communication and protocol standards	ISO 15693
Minimum distance to metal	10mm
Storage temperature	-20...+70 °C
Design	smart card
Housing material	Plastic, Makrolon
Material active face	Plastic, PVC
Protection class	IP40
Packaged quantity	1

- Mobile data carrier
- Read/write
- Compatible with a number of BLident read/write heads (see data sheet or compatibility table)
- EEPROM memory 128 bytes

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

7 **BL ident[®] – Read/write heads for the HF-band**

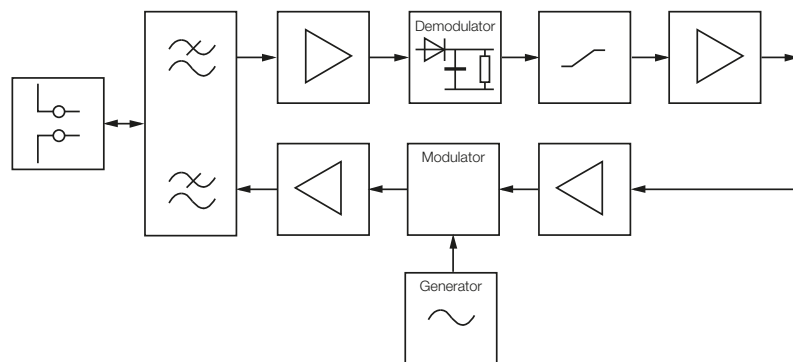
7.1	Functionality	2
7.1.1	Read/write head electronics	2
7.1.2	Read/write head antenna	2
7.2	Connection of the read/write heads	3
7.3	Overview of read/write head model types	4
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7.1 Functionality

The *BL ident*® read/write heads (transceiver) are used for contactless data exchange with the respective data carriers (TAGs). They form a so-called air interface (transmission window) the size of which depends and varies on the data carrier and transceiver combination that was chosen. In this air interface, the data carrier is supplied with power and the data exchange is realized. The operating frequency is 13.56 MHz. The reachable distances vary depending on lengths between 0...500 mm.

The read/write head consists of electronics and an antenna. („Figure 1: Block switching diagram read/write head“)

Figure 1:
Block switching
diagram read/
write head



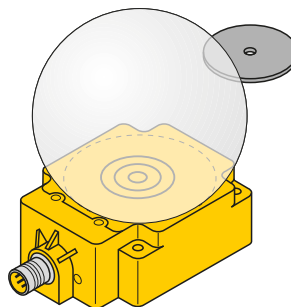
7.1.1 Read/write head electronics

With the help of the electronics, communication between the data carrier, the read/write head, and the *BL ident*® interface module is ensured.

7.1.2 Read/write head antenna

The antenna consists of an air coil. The antenna serves to transfer data and power between data carrier and read/write head. The antenna creates an electromagnetic field which is recognized by the data carrier within the transmission range. Data and power transmission is only possible as long as the data carrier remains in this field („Figure 2: Transmission range“).

Figure 2:
Transmission
range



7.2 Connection of the read/write heads

The read/write heads are connected to the *BL ident*® interface module with a M12 x 1 connector. The supply (24 VDC) and function occurs via the *BL ident*® interface module.

The cables .../S2500 have the connection diagram shown in „Figure 3: Connection diagram for cables .../S2500“.

Figure 3:
Connection diagram for cables
.../S2500



The cables .../S2501 have a different connection diagram („Figure 4: Connection diagram for the cables .../S2501“).

Figure 4:
Connection diagram for the
cables .../S2501



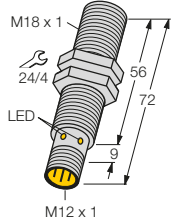
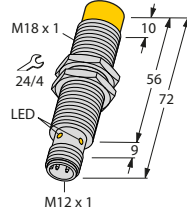
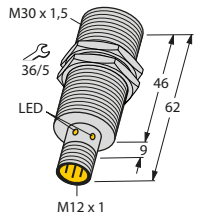
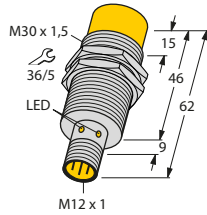
The cables .../S2503 have also a different connection diagram („Figure 5: Connection diagram for the cables .../S2503“).

Figure 5:
Connection diagram for the
cables .../S2503



7.3 Overview of read/write head model types

Table 1:
Overview of
read/write
head model ty-
pes

Dimensions/enclosure length	Installation prerequisites	Characteristics	Connection	Type code
	flush	standard	via BL ident®- cable	TB-M18-H1147 TB-M18-H1147/S1126
		wash-down (IP69K)	via BL ident®- cable	TB-EM18WD-H1147¹ TB-EM18WD-H1147/S1126¹
		wash-down (IP69K) ATEX	via BL ident®- cable	TB-EM18WD-H1147-Ex¹² TB-EM18WD-H1147/S1126-Ex¹²
	non flush	standard	via BL ident®- cable	TN-M18-H1147 TN-M18-H1147/S1126
		wash-down (IP69K)	via BL ident®- cable	TN-EM18WD-H1147¹ TN-EM18WD-H1147/S1126¹
		wash-down (IP69K) ATEX	via BL ident®- cable	TN-EM18WD-H1147-Ex¹² TN-EM18WD-H1147/S1126-Ex¹²
	flush	standard	via BL ident®- cable	TB-M30-H1147 TB-M30-H1147/S1126
		wash-down (IP69K)	via BL ident®- cable	TB-EM30WD-H1147¹ TB-EM30WD-H1147/S1126¹
		wash-down (IP69K) ATEX	via BL ident®- cable	TB-EM30WD-H1147-Ex¹² TB-EM30WD-H1147/S1126-Ex¹²
	non flush	standard	via BL ident®- cable	TN-M30-H1147 TN-M30-H1147/S1126
		wash-down (IP69K)	via BL ident®- cable	TN-EM30WD-H1147 TN-EM30WD-H1147/S1126
		wash-down (IP69K) ATEX		TN-EM30WD-H1147-Ex¹² TN-EM30WD-H1147/S1126-Ex¹²

¹WD-series is resistant against all commercial acidic and alkaline cleaners and disinfectors, tube material: V4A (1.4404; 316L); front cap LCP Vectra 140 ² II 3 G Ex nA II T4 Gc, II 3 D Ex t III B T135°C Dc

Table 1:
Overview of
read/write
head model ty-
pes

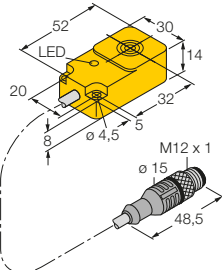
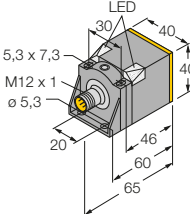
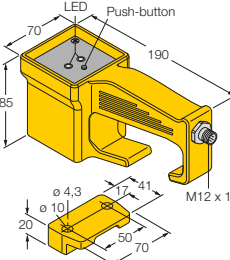
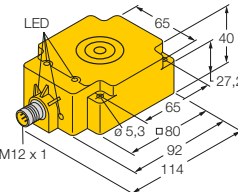
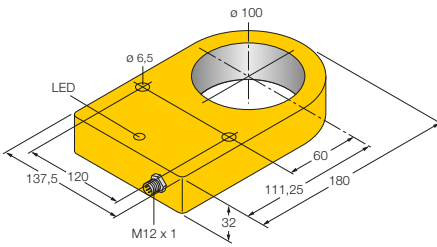
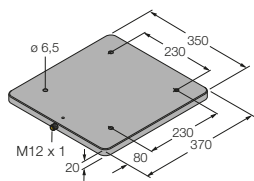
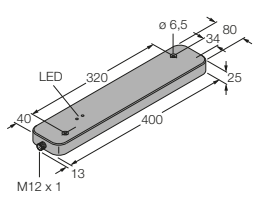
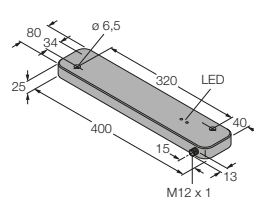
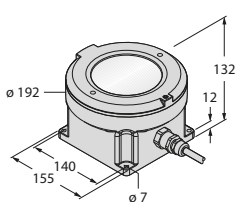
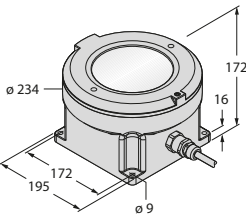
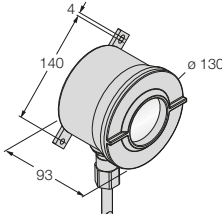
Dimensions/enclosure length	Installation prerequisites	Characteristics	Connection	Type code
	non flush	flat design	via <i>BL ident</i> [®] - cable	TN-Q14-0,15-RS4.47T
	partially embedded	standard	via <i>BL ident</i> [®] - cable	TN-CK40-H1147 TN-CK40-H1147/S1126
	non flush	flexible use	via <i>BL ident</i> [®] - cable	HT-Ident-H1147 (Read/handwrite head) HT-Ident-H1187 (Read/handwrite head) (with scanner, LED-display and summer) Special cable needed!
	non flush	standard	via <i>BL ident</i> [®] - cable	TN-Q80-H1147 TN-Q80-H1147/S1126
		ATEX	via <i>BL ident</i> [®] - cable	TN-Q80-H1147-Ex²
		long read/ write distance	via <i>BL ident</i> [®] - cable	TNER-Q80-H1147 TNLR-Q80-H1147 TNLR-Q80-H1147/S1126
		long read/ write distance ATEX	via <i>BL ident</i> [®] - cable	TNLR-Q80-H1147-Ex

Table 1:
Overview of
read/write
head model ty-
pes

Dimensions/enclosure length	Installation prerequisites	Characteristics	Connection	Type code
	non flush	standard	via BL ident®-cable	TN-S32XL-H1147
	non flush	long read/write distance	via BL ident®-cable	TNLR-Q350-H1147
	non flush	suitable for roller conveyors (horizontal and vertical alignment possible)	via BL ident®-cable	TNLR-Q80L400-H1147 Note see page 7-7
	non flush	suitable for guide roller conveyors (horizontal and vertical alignment possible)	via BL ident®-cable	TNLR-Q80L400-H1147L Note see page 7-7
	non flush	ATEX	via BL ident®-cable	TNLR-Q80-R192H132-2M-Ex¹

¹ II 2 G Ex D II B ...

Table 1:
Overview of
read/write
head model ty-
pes

Dimensions/enclosure length	Installation prerequisites	Characteristics	Connection	Type code
	non flush	ATEX	via <i>BL ident</i> [®] -cable	TNLR-Q80-R234H172-2M-Ex¹
	partially embedded	ATEX	via <i>BL ident</i> [®] -cable	TN-CK40-R130H93-2M-Ex¹



Note

The TNLR-Q80L400- read/write heads are, on principle, suited for application in roller conveyors. However, data may not be transmitted interference-free because the high-frequency magnetic field produced by the read/write head can be modulated strongly via the roller bearings and the framework of electrically connected rotating rollers. Therefore, the mounting of additional shields is optionally required to protect the read/write head against interference.

Made of metal and forming a U-profile, the shields have to be mounted flush with the top edge of the read/write head. Direct contact with the read/write head must be avoided. Electrical interconnection between the shields and the framework must be established.

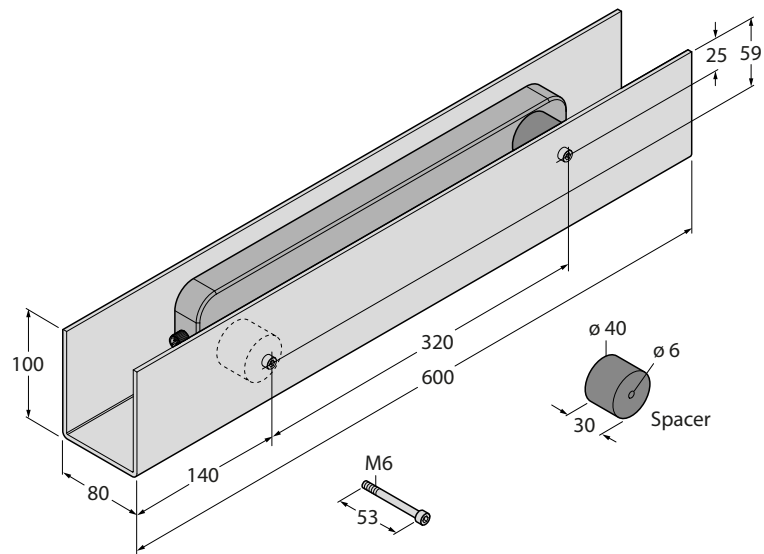
When mounting the read/write head in the U-profile, plastic spacers must be used.

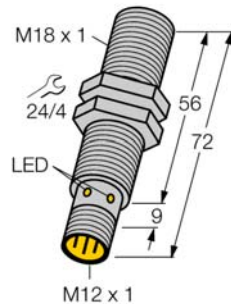
Once mounted in the application, the attainable read-write distance and the travel speed must be determined under real operating conditions.

see illustration Fig. 27:

The following drawing is only an example. The dimensions to be used in the application may differ from it.

Figure 6:
Mounting
TNLR-Q80L400
in U-profile





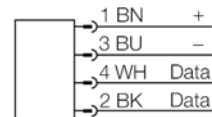
Type	TB-M18-H1147
Ident-No.	7030001
Mounting condition	flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	30 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Metal, CuZn, chrome-plated
Material active face	Plastic, PA12-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Threaded barrel, M18 x 1
- Chrome-plated brass
- Every read/write head can communicate with a number of different TURCK data carriers
- Power supply and function only via connection to the BLident interface module
- M12 x 1 connector, connect only using BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

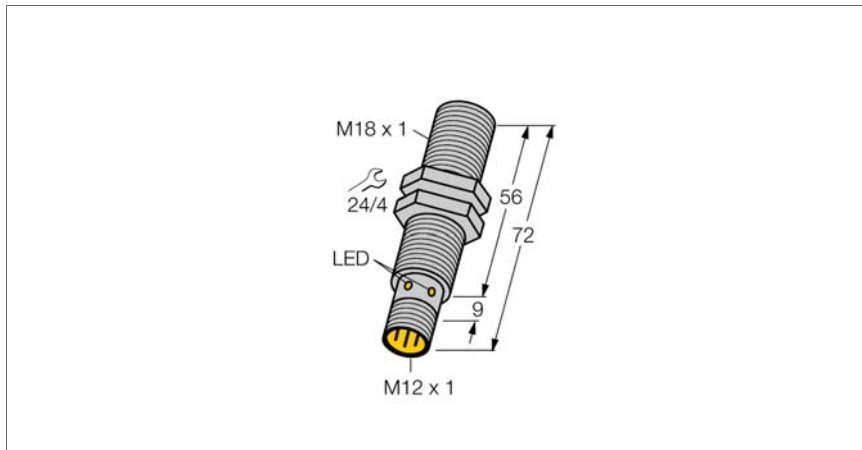
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

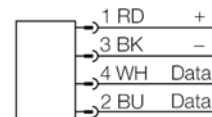
Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



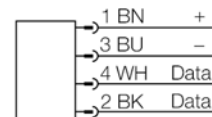
Type	TB-M18-H1147/S1126
Ident-No.	7030212
Mounting condition	flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	30 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Metal, CuZn, chrome-plated
Material active face	Plastic, PA12-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Threaded barrel, M18 x 1
- Chrome-plated brass
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

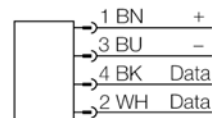
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

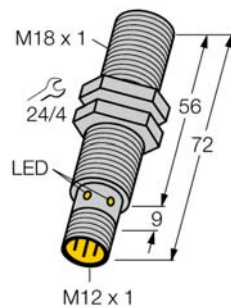
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

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Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

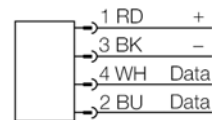
Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



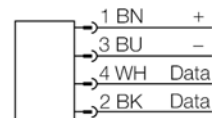
Type	TB-EM18WD-H1147
Ident-No.	7030224
Mounting condition	flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	30 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- Threaded barrel, M18 x 1
- Stainless steel 1.4404
- Front cap made of liquid crystal polymer Vectra C130
- High protection class IP69K for rough ambient conditions
- Special double-lip seal
- Protection against all common acid and alkaline cleaning agents
- For the food industry
- Laser engraved label, permanently legible
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503

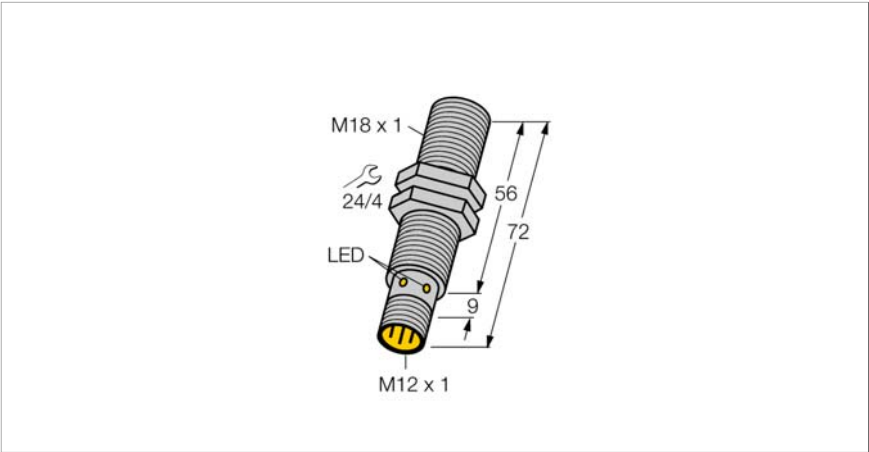


Connectors .../S2500



Connectors .../S2501

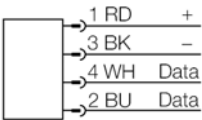




Type	TB-EM18WD-H1147/S1126
Ident-No.	7030228
Mounting condition	flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	30 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Stainless steel, V4A (1.4404)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- Threaded barrel, M18 x 1
- Stainless steel 1.4404
- Front cap made of liquid crystal polymer Vectra C130
- High protection class IP69K for rough ambient conditions
- Special double-lip seal
- Protection against all common acid and alkaline cleaning agents
- For the food industry
- Laser engraved label, permanently legible
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

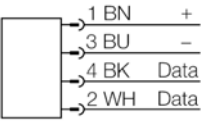
Connectors .../S2503



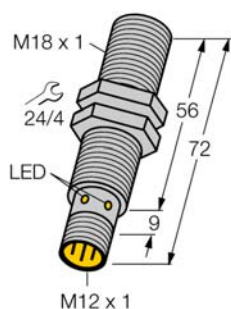
Connectors .../S2500



Connectors .../S2501



TB-EM18WD-H1147-Ex



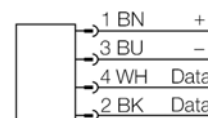
Type	TB-EM18WD-H1147-Ex
Ident-No.	7030381
Mounting condition	flush
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ex II 3G Ex nA II T4 Gc II 3D Ex t IIIB T135°C Dc TURCK Ex-10005M X
Approval acc. to	
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	30 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- ATEX Kategorie II 3 G, Ex Zone 2
- ATEX Kategorie II 3 D, Ex Zone 22
- Threaded barrel, M18 x 1
- Stainless steel 1.4404
- Front cap made of liquid crystal polymer Vectra C130
- High protection class IP69K for rough ambient conditions
- Special double-lip seal
- Protection against all common acid and alkaline cleaning agents
- For the food industry
- Laser engraved label, permanently legible
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

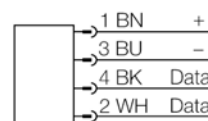
Connectors .../S2503

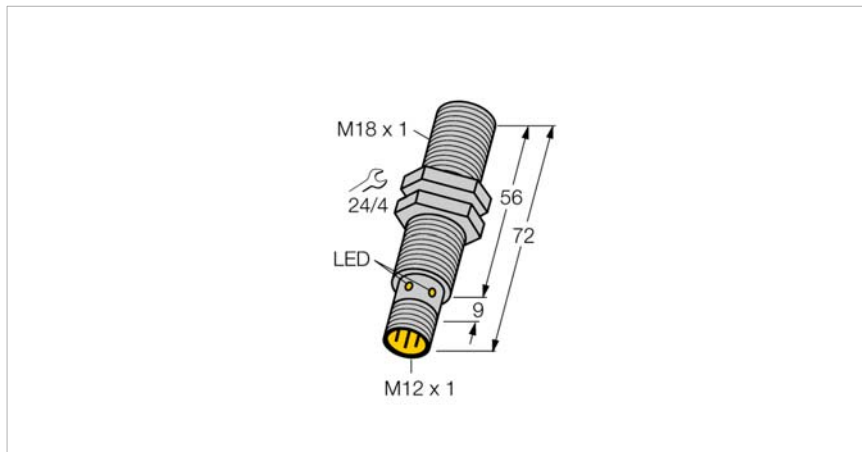


Connectors .../S2500



Connectors .../S2501





Type	TB-EM18WD-H1147/S1126-EX
Ident-No.	7030383
Mounting condition	flush
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ex II 3G Ex nA II T4 Gc II 3D Ex t IIIB T135°C Dc TURCK Ex-10005M X
Approval acc. to	
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	30 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- ATEX Kategorie II 3 G, Ex Zone 2
- ATEX Kategorie II 3 D, Ex Zone 22
- Threaded barrel, M18 x 1
- Stainless steel 1.4404
- Front cap made of liquid crystal polymer Vectra C130
- High protection class IP69K for rough ambient conditions
- Special double-lip seal
- Protection against all common acid and alkaline cleaning agents
- For the food industry
- Laser engraved label, permanently legible
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

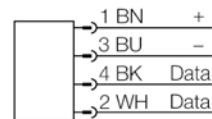
Connectors .../S2503

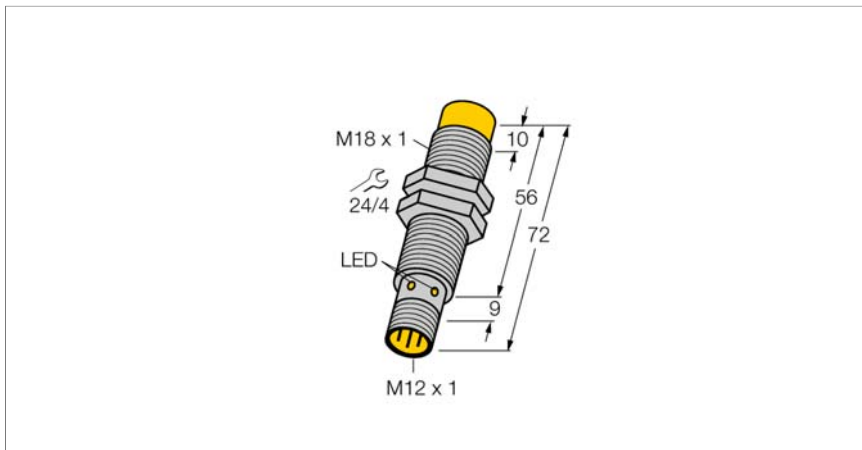


Connectors .../S2500



Connectors .../S2501





Type	TN-M18-H1147
Ident-No.	7030002
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Metal, CuZn, chrome-plated
Material active face	Plastic, PA12-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Threaded barrel, M18 x 1
- Chrome-plated brass
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

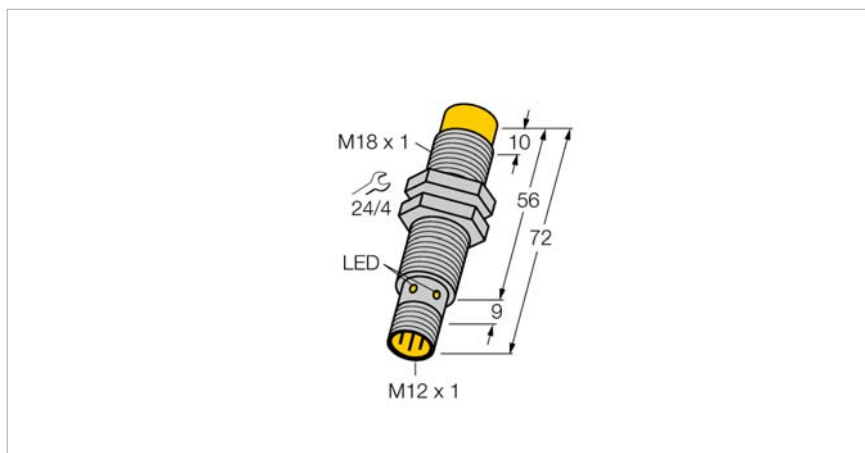
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

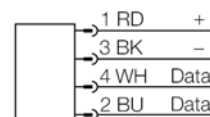
Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



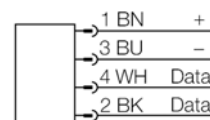
Type	TN-M18-H1147/S1126
Ident-No.	7030213
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Metal, CuZn, chrome-plated
Material active face	Plastic, PA12-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Threaded barrel, M18 x 1
- Chrome-plated brass
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

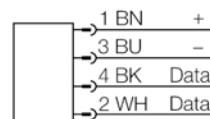
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

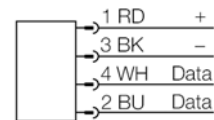
Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



Type	TN-EM18WD-H1147
Ident-No.	7030223
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- Threaded barrel, M18 x 1
- Stainless steel 1.4404
- Front cap made of liquid crystal polymer Vectra C130
- High protection class IP69K for rough ambient conditions
- Special double-lip seal
- Protection against all common acid and alkaline cleaning agents
- For the food industry
- Laser engraved label, permanently legible
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

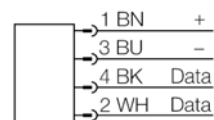
Connectors .../S2503

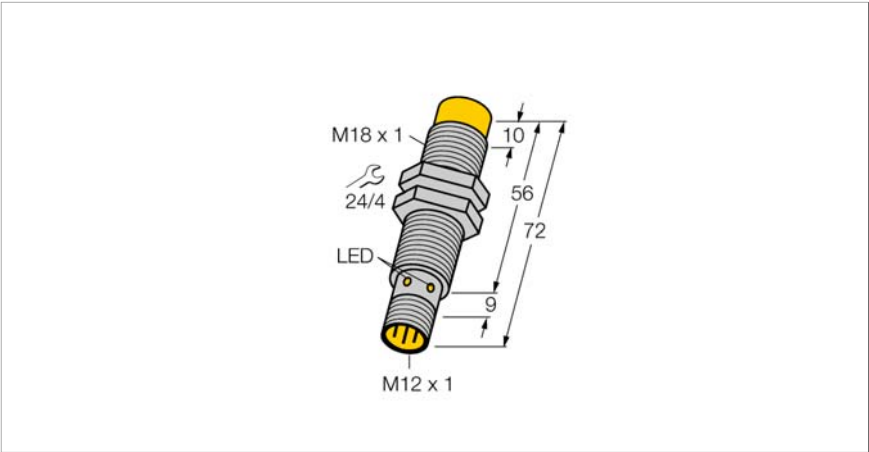


Connectors .../S2500



Connectors .../S2501





Type	TN-EM18WD-H1147/S1126
Ident-No.	7030227
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- Threaded barrel, M18 x 1
- Stainless steel 1.4404
- Front cap made of liquid crystal polymer Vectra C130
- High protection class IP69K for rough ambient conditions
- Special double-lip seal
- Protection against all common acid and alkaline cleaning agents
- For the food industry
- Laser engraved label, permanently legible
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

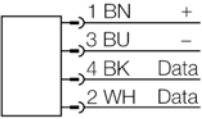
Connectors .../S2503



Connectors .../S2500

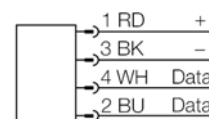
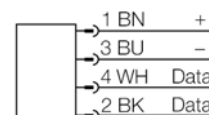
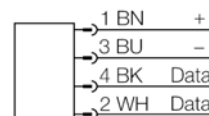


Connectors .../S2501



TN-EM18WD-H1147-Ex


- ATEX Kategorie II 3 G, Ex Zone 2
- ATEX Kategorie II 3 D, Ex Zone 22
- Threaded barrel, M18 x 1
- Stainless steel 1.4404
- Front cap made of liquid crystal polymer Vectra C130
- High protection class IP69K for rough ambient conditions
- Special double-lip seal
- Protection against all common acid and alkaline cleaning agents
- For the food industry
- Laser engraved label, permanently legible
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503

Connectors .../S2500

Connectors .../S2501


Type	TN-EM18WD-H1147-Ex
Ident-No.	7030382
Mounting condition	non-flush
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ex II 3G Ex nA II T4 Gc II 3D Ex t IIIB T135°C Dc TURCK Ex-10005M X
Approval acc. to	
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green



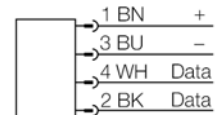
Type	TN-EM18WD-H1147/S1126-EX
Ident-No.	7030384
Mounting condition	non-flush
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ex II 3G Ex nA II T4 Gc II 3D Ex t IIIB T135°C Dc TURCK Ex-10005M X
Approval acc. to	
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M18 x 1
Dimensions	72 mm
Housing diameter	18 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- ATEX Kategorie II 3 G, Ex Zone 2
- ATEX Kategorie II 3 D, Ex Zone 22
- Threaded barrel, M18 x 1
- Stainless steel 1.4404
- Front cap made of liquid crystal polymer Vectra C130
- High protection class IP69K for rough ambient conditions
- Special double-lip seal
- Protection against all common acid and alkaline cleaning agents
- For the food industry
- Laser engraved label, permanently legible
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503

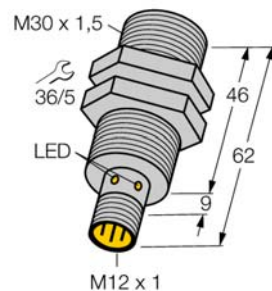


Connectors .../S2500



Connectors .../S2501





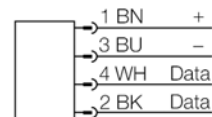
Type	TB-M30-H1147
Ident-No.	7030003
Mounting condition	flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Metal, CuZn, chrome-plated
Material active face	Plastic, PA12-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Threaded barrel, M30 x 1.5
- Chrome-plated brass
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

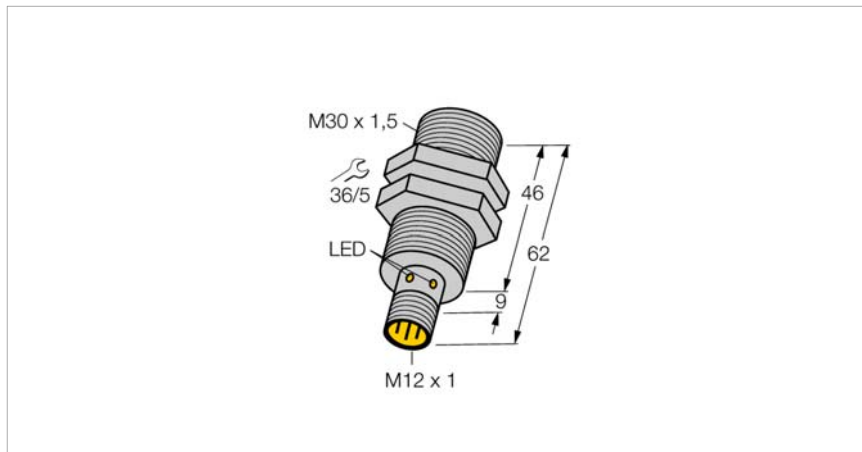
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



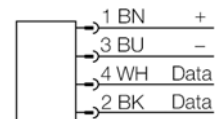
Type	TB-M30-H1147/S1126
Ident-No.	7030214
Mounting condition	flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Metal, CuZn, chrome-plated
Material active face	Plastic, PA12-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Threaded barrel, M30 x 1.5
- Chrome-plated brass
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

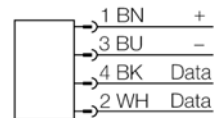
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

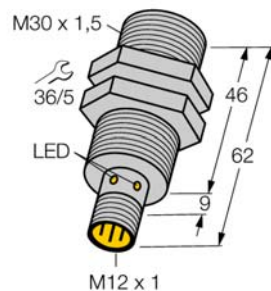
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

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Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



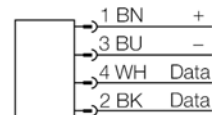
Type	TB-EM30WD-H1147
Ident-No.	7030221
Mounting condition	flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- threaded barrel, M30 x 1
- Stainless steel 1.4404
- front cap made of liquid crystal polymer Vectra C130
- high degree of protection IP69K for extreme environmental conditions
- special double-lip seal
- protection against all common acid and alkaline cleaning agents
- Suited for applications in the food industry
- permanently legible type label due to laser engraving
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503

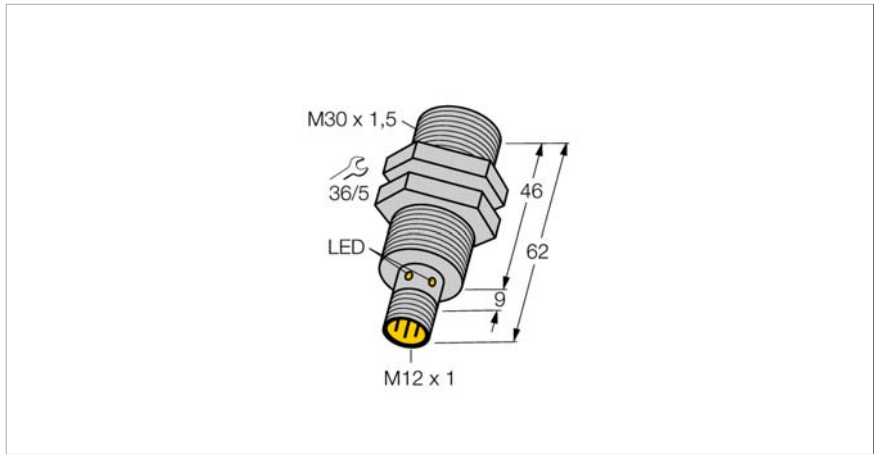


Connectors .../S2500



Connectors .../S2501

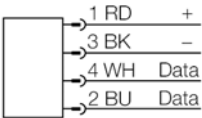




Type	TB-EM30WD-H1147/S1126
Ident-No.	7030225
Mounting condition	flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- threaded barrel, M30 x 1
- Stainless steel 1.4404
- front cap made of liquid crystal polymer Vectra C130
- high degree of protection IP69K for extreme environmental conditions
- special double-lip seal
- protection against all common acid and alkaline cleaning agents
- Suited for applications in the food industry
- permanently legible type label due to laser engraving
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

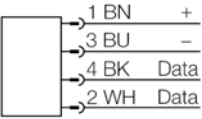
Connectors .../S2503

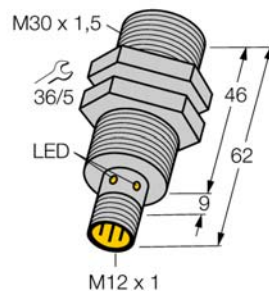


Connectors .../S2500



Connectors .../S2501





Type	TB-EM30WD-H1147-Ex
Ident-No.	7030385
Mounting condition	flush
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 3G Ex nA II T4 Gc II 3D Ex t IIIB T135°C Dc TURCK Ex-10005M X
Approval acc. to	
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- ATEX Kategorie II 3 G, Ex Zone 2
- ATEX Kategorie II 3 D, Ex Zone 22
- threaded barrel, M30 x 1
- Stainless steel 1.4404
- front cap made of liquid crystal polymer Vectra C130
- high degree of protection IP69K for extreme environmental conditions
- special double-lip seal
- protection against all common acid and alkaline cleaning agents
- Suited for applications in the food industry
- permanently legible type label due to laser engraving
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

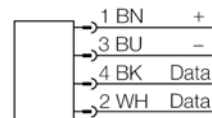
Connectors .../S2503

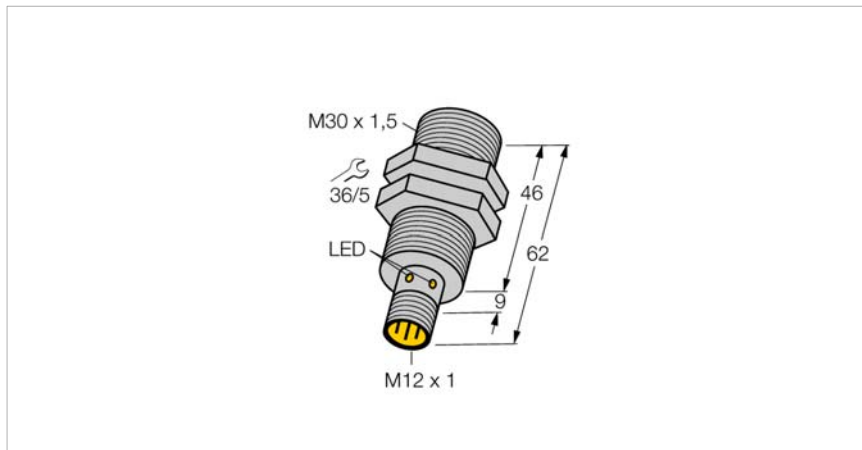


Connectors .../S2500



Connectors .../S2501





Type	TB-EM30WD-H1147/S1126-EX
Ident-No.	7030387
Mounting condition	flush
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ex II 3G Ex nA II T4 Gc II 3D Ex t IIIB T135°C Dc TURCK Ex-10005M X
Approval acc. to	
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	45 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- ATEX Kategorie II 3 G, Ex Zone 2
- ATEX Kategorie II 3 D, Ex Zone 22
- threaded barrel, M30 x 1
- Stainless steel 1.4404
- front cap made of liquid crystal polymer Vectra C130
- high degree of protection IP69K for extreme environmental conditions
- special double-lip seal
- protection against all common acid and alkaline cleaning agents
- Suited for applications in the food industry
- permanently legible type label due to laser engraving
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

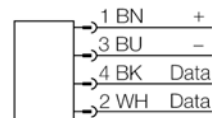
Connectors .../S2503

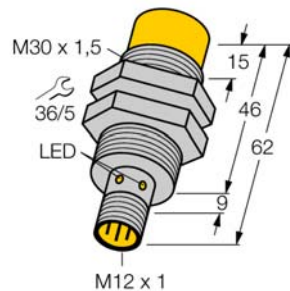


Connectors .../S2500



Connectors .../S2501





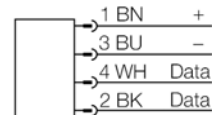
Type	TN-M30-H1147
Ident-No.	7030004
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	77 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Metal, CuZn, chrome-plated
Material active face	Plastic, PA12-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Threaded barrel, M30 x 1.5
- Chrome-plated brass
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

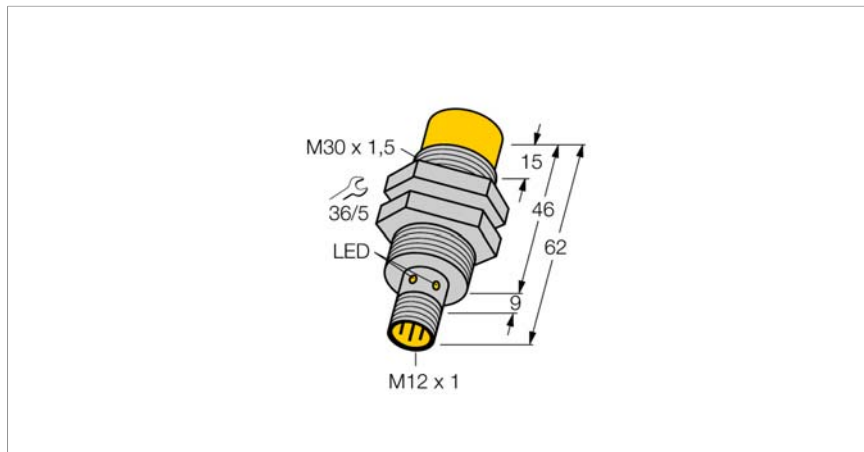
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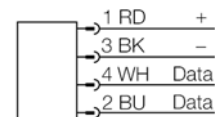
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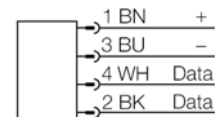
Type	TN-M30-H1147/S1126
Ident-No.	7030215
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	77 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Metal, CuZn, chrome-plated
Material active face	Plastic, PA12-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Threaded barrel, M30 x 1.5
- Chrome-plated brass
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

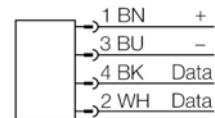
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

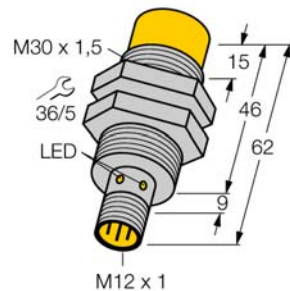
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



Type	TN-EM30WD-H1147
Ident-No.	7030222
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	77 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- threaded barrel, M30 x 1
- Stainless steel 1.4404
- front cap made of liquid crystal polymer Vectra C130
- high degree of protection IP69K for extreme environmental conditions
- special double-lip seal
- protection against all common acid and alkaline cleaning agents
- Suited for applications in the food industry
- permanently legible type label due to laser engraving
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

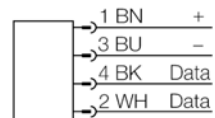
Connectors .../S2503

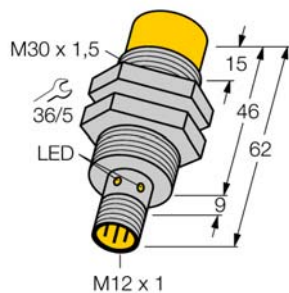


Connectors .../S2500



Connectors .../S2501

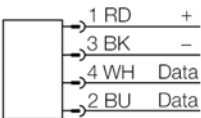




Type	TN-EM30WD-H1147/S1126
Ident-No.	7030226
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	77 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- threaded barrel, M30 x 1
- Stainless steel 1.4404
- front cap made of liquid crystal polymer Vectra C130
- high degree of protection IP69K for extreme environmental conditions
- special double-lip seal
- protection against all common acid and alkaline cleaning agents
- Suited for applications in the food industry
- permanently legible type label due to laser engraving
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503

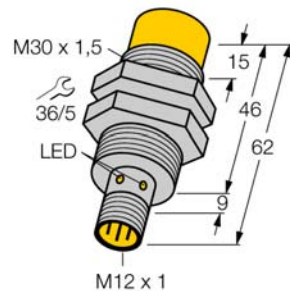


Connectors .../S2500



Connectors .../S2501





Type	TN-EM30WD-H1147-Ex
Ident-No.	7030386
Mounting condition	non-flush
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ex II 3G Ex nA II T4 Gc II 3D Ex t IIIB T135°C Dc TURCK Ex-10005M X
Approval acc. to	
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	77 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- ATEX Kategorie II 3 G, Ex Zone 2
- ATEX Kategorie II 3 D, Ex Zone 22
- threaded barrel, M30 x 1
- Stainless steel 1.4404
- front cap made of liquid crystal polymer Vectra C130
- high degree of protection IP69K for extreme environmental conditions
- special double-lip seal
- protection against all common acid and alkaline cleaning agents
- Suited for applications in the food industry
- permanently legible type label due to laser engraving
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503

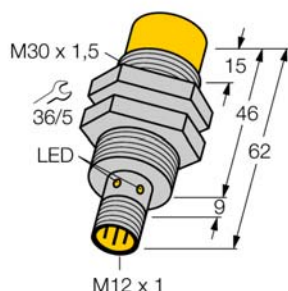


Connectors .../S2500



Connectors .../S2501





Type	TN-EM30WD-H1147/S1126-EX
Ident-No.	7030388
Mounting condition	non-flush
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ex II 3G Ex nA II T4 Gc II 3D Ex t IIIB T135°C Dc TURCK Ex-10005M X
Approval acc. to	
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	77 mm
Output function	4-wire, read/write
Design	threaded barrel, M30 x 1.5
Dimensions	62 mm
Housing diameter	30 mm
Housing material	Stainless steel, V2A (1.4301)
Material active face	Plastic, LCP-GF30
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68 / IP69K
Operating voltage	LED green

- ATEX Kategorie II 3 G, Ex Zone 2
- ATEX Kategorie II 3 D, Ex Zone 22
- threaded barrel, M30 x 1
- Stainless steel 1.4404
- front cap made of liquid crystal polymer Vectra C130
- high degree of protection IP69K for extreme environmental conditions
- special double-lip seal
- protection against all common acid and alkaline cleaning agents
- Suited for applications in the food industry
- permanently legible type label due to laser engraving
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503

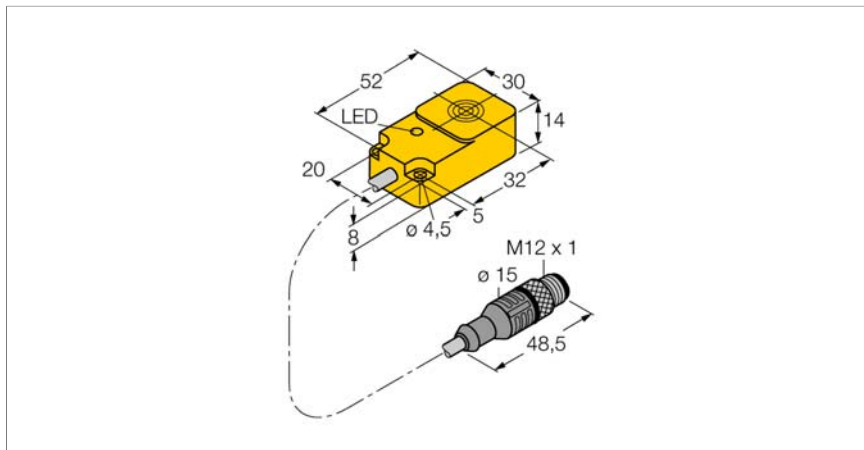


Connectors .../S2500



Connectors .../S2501

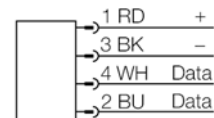




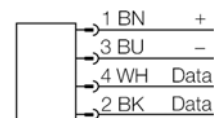
Type	TN-Q14-0.15-RS4.47T
Ident-No.	7030235
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 75 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	72 mm
Output function	4-wire, read/write
Design	rectangular, Q14
Dimensions	52x 30x 14mm
Housing material	Plastic, PBT-GF30-V0, yellow
Material active face	Plastic, PBT-GF30-V0, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Rectangular, height 14mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

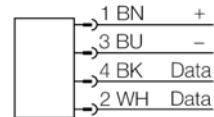
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

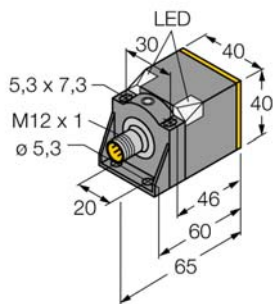
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

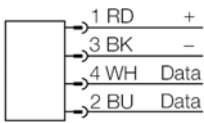
Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



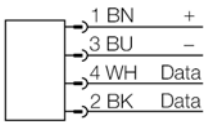
Type	TN-CK40-H1147
Ident-No.	7030006
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	115 mm
Output function	4-wire, read/write
Design	rectangular, CK40
Dimensions	65x 40x 40mm
Housing diameter	40 mm
Housing material	Plastic, PBT-GF30-V0, black
Material active face	Plastic, PA6-GF30, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green
Included in scope of supply	BS4-CK40

- rectangular, height 40 mm
- 5 read/write head positions
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

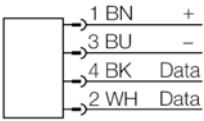
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

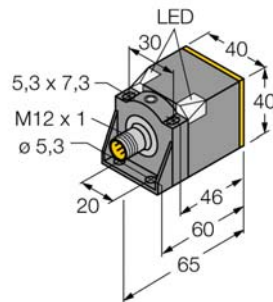
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Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



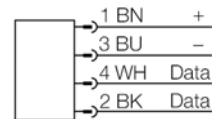
Type	TN-CK40-H1147/S1126
Ident-No.	7030216
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	115 mm
Output function	4-wire, read/write
Design	rectangular, CK40
Dimensions	65x 40x 40mm
Housing diameter	40 mm
Housing material	Plastic, PBT-GF30-V0, black
Material active face	Plastic, PA6-GF30, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green
Included in scope of supply	BS4-CK40

- rectangular, height 40 mm
- 5 read/write head positions
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

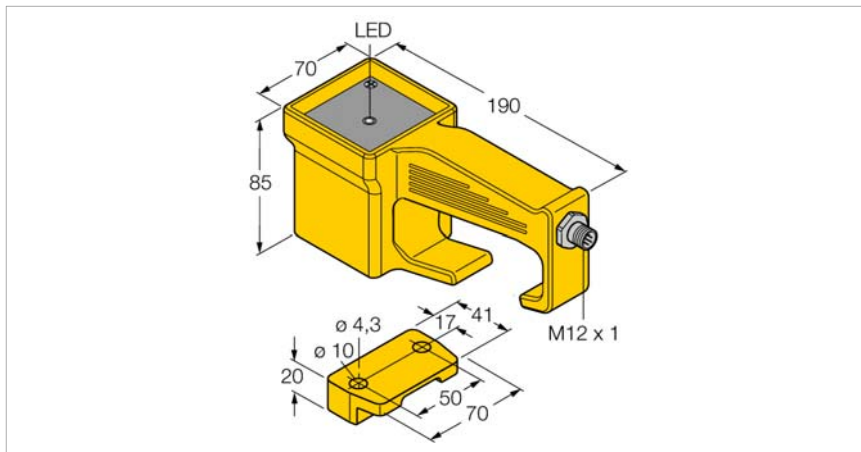
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Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

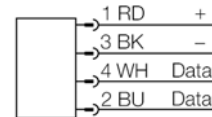
HT-Ident-H1147



Type	HT-IDENT-H1147
Ident-No.	7030236
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Output function	4-wire, read/write
Dimensions	190x 70x 85mm
Housing material	yellow
Material active face	Plastic, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

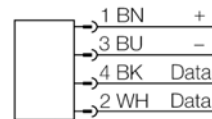
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

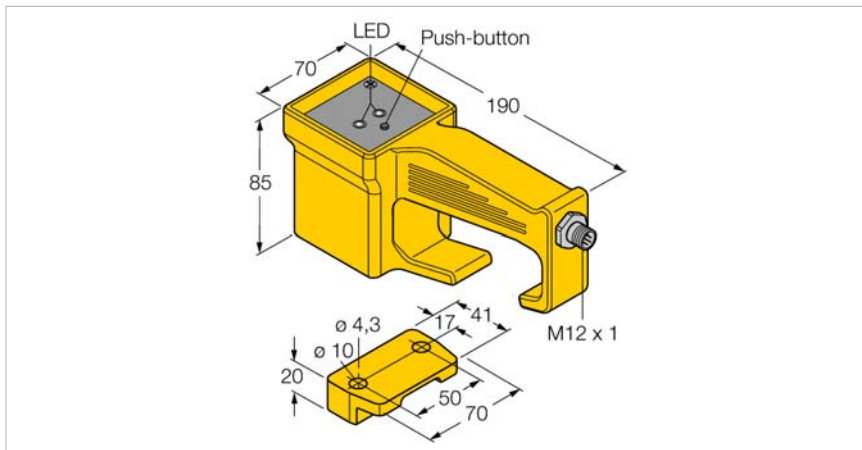
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



Type	HT-IDENT-H1187
Ident-No.	7030238

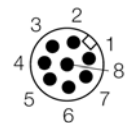
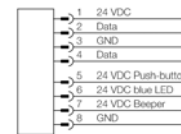
Mounting condition	non-flush
Ambient temperature	-25...+70 °C

Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	115 mm
Output function	8-wire, read/write

Dimensions	190x 70x 85mm
Housing material	yellow
Material active face	Plastic, yellow

Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Every read/write head can communicate with a number of different TURCK data carriers
- Power supply and function only via connection to the BL ident interface module
- M12 x 1 connector, 8-pole
- Additional LED, buzzer and pushbutton
- Customized assignment of functions via the outward contact.

Wiring diagram**pin configuration
M12 connectors****Functional principle**

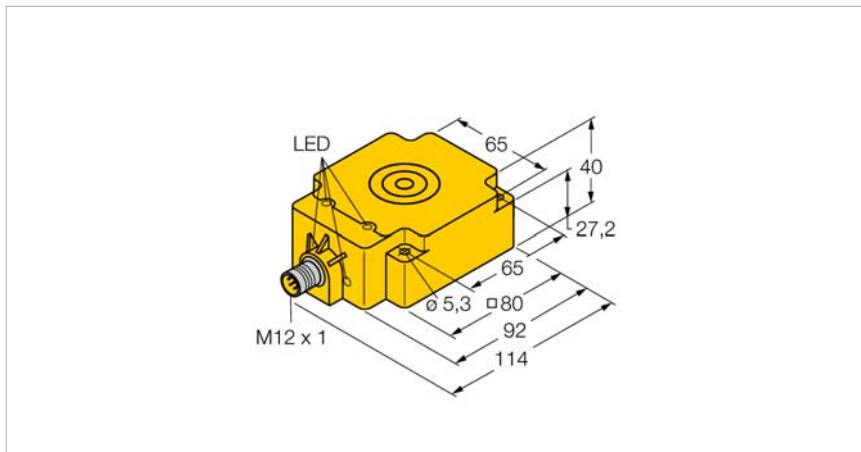
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The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

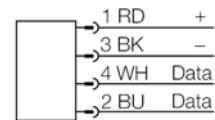
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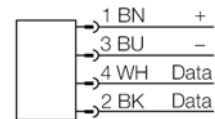
Type	TN-Q80-H1147
Ident-No.	7030007
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	146 mm
Output function	4-wire, read/write
Design	rectangular, Q80
Dimensions	92x 80x 40mm
Housing material	Plastic, PBT-GF30-V0, yellow
Material active face	Plastic, PBT-GF30-V0, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Rectangular, height 40 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

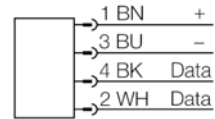
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

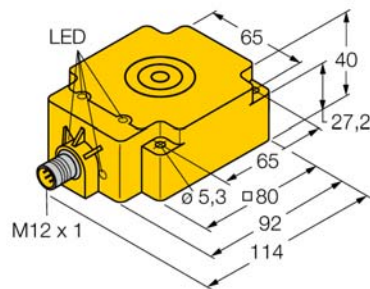
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The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

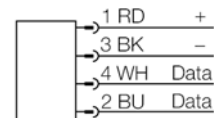
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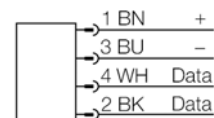
Type	TN-Q80-H1147/S1126
Ident-No.	7030217
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	10...30VDC
DC rated operational current	≤ 80 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	146 mm
Output function	4-wire, read/write
Design	rectangular, Q80
Dimensions	92x 80x 40mm
Housing material	Plastic, PBT-GF30-V0, yellow
Material active face	Plastic, PBT-GF30-V0, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Rectangular, height 40 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

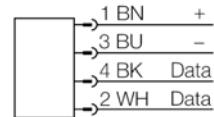
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

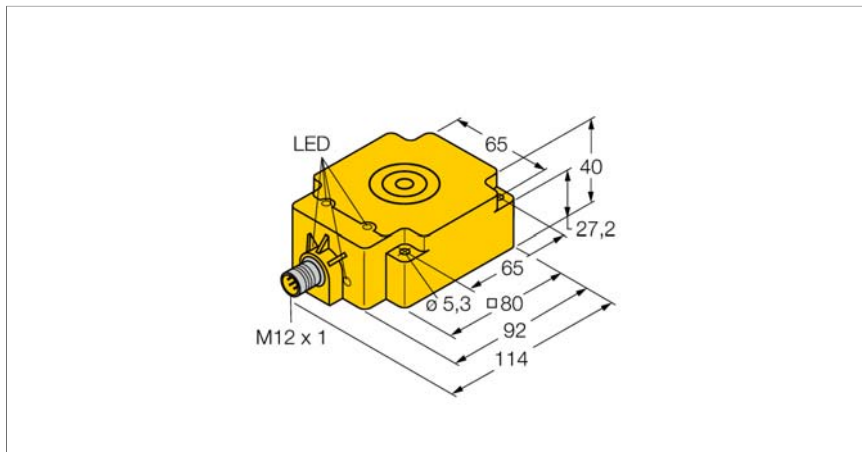
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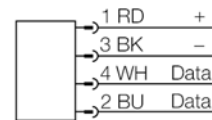
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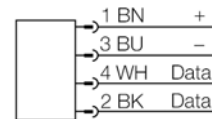
Type	TNER-Q80-H1147
Ident-No.	7030211
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 90 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	80 mm
Output function	4-wire, read/write
Design	rectangular, Q80
Dimensions	92x 80x 40mm
Housing material	Plastic, PBT-GF30-V0, yellow
Material active face	Plastic, PBT-GF30-V0, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Rectangular, height 40 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

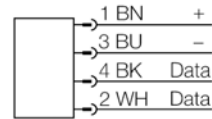
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

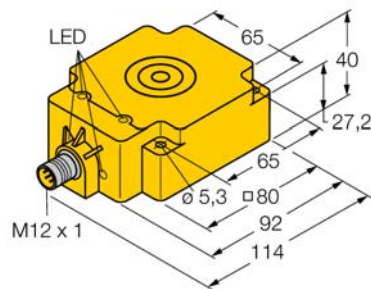
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



Type	TNLR-Q80-H1147/S1126
Ident-No.	7030219

Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C

Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 90 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	215 mm
Output function	4-wire, read/write

Design	rectangular, Q80
Dimensions	92x 80x 40mm
Housing material	Plastic, PBT-GF30-V0, yellow
Material active face	Plastic, PBT-GF30-V0, yellow

Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Rectangular, height 40 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

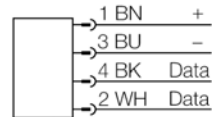
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

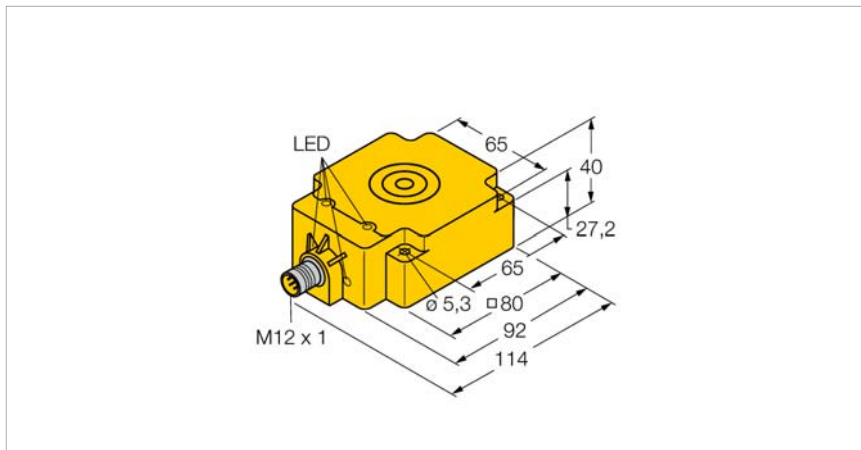
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

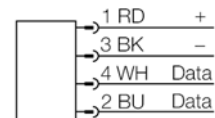
Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



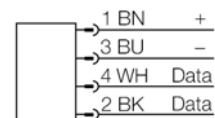
Type	TNLR-Q80-H1147
Ident-No.	7030230
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 90 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	215 mm
Output function	4-wire, read/write
Design	rectangular, Q80
Dimensions	92x 80x 40mm
Housing material	Plastic, PBT-GF30-V0, yellow
Material active face	Plastic, PBT-GF30-V0, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Rectangular, height 40 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

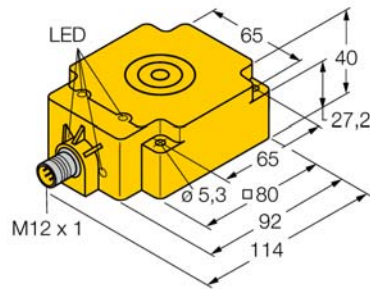
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

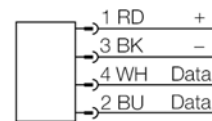
Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



- ATEX category II 3 G, Ex-zone 2
- ATEX category II 3 D, Ex-zone 22
- Rectangular, height 40 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

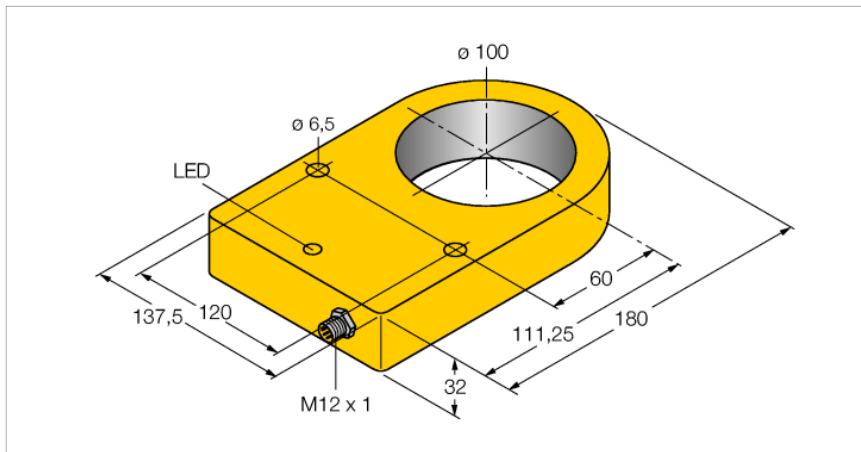
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

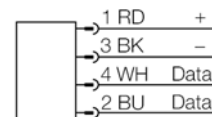
Type	TNLR-Q80-H1147-EX
Ident-No.	7030303
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C in the explosion hazardous area see instruction leaflet
Storage temperature	in the explosion hazardous area see instruction leaflet
Device designation	Ⓔ II 3G Ex nA II T4 II 3D Ex tD A22 IP67 T135°C
Approval acc. to	BVS 09 ATEX E 122 X
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 90 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	165 mm
Output function	4-wire, read/write
Design	rectangular, Q80
Dimensions	92x 80x 40mm
Housing material	Plastic, PBT-GF30-V0, yellow
Material active face	Plastic, PBT-GF30-V0, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green



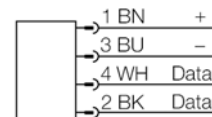
Type	TN-S32XL-H1147
Ident-No.	7030008
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	180 mm
Output function	4-wire, read/write
Internal ring diameter	100 mm
Design	ring sensor, S32
Dimensions	180x 137.5x 32mm
Housing material	Plastic, POM, yellow
Material active face	ABS, yellow
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- Rectangular, height 32 mm
- Plastic, ABS
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

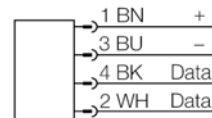
Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

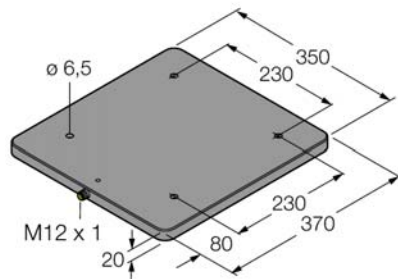
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



Type	TNLR-Q350-H1147
Ident-No.	7030220
Mounting condition	non-flush
Ambient temperature	-25...+70 °C
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 250 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	662 mm
Output function	4-wire, read/write
Design	rectangular, Q350
Dimensions	370x 350x 20mm
Housing material	Plastic, PBT-GF30-V0, black
Material active face	Plastic, black
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green



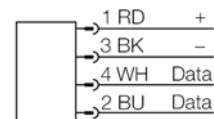
Note

If read/write head is turned on, it checks, whether the resonance frequency is influenced by the surrounding metal. In this case, the oscillation circuit tunes its frequency to reach the resonance frequency again (optimum). But this is only possible to a certain extent. If there is too much metal in the environment of the read/write head, tuning is not possible, resp. the surrounding metal reduces the energy of the magnetic field.

For that reason of the reduced read/write distance, there is no communication between read/write head and data carrier (orange LED lits). Reversely if the LED doesn't lit, you cannot assume that there is no magnetic field range reduction. In fact the luminous LED is an indication for too much metal in the environment and an enormous reduction of the read/write distance (appr. 50 % less).

- Rectangular, 370x350 mm, height 20 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

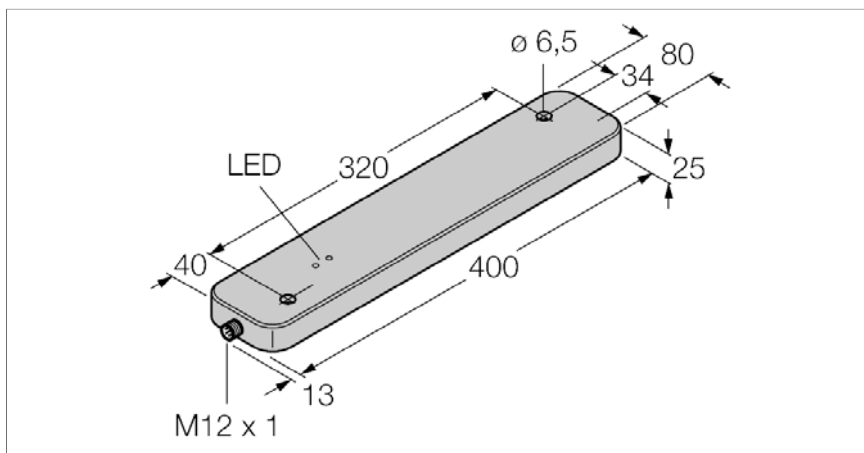
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

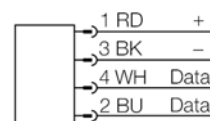
TNLR-Q80L400-H1147



Type	TNLR-Q80L400-H1147
Ident-No.	7030204Lengthwise
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 230 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	360 mm
Output function	4-wire, read/write
Design	rectangular
Dimensions	400x 80x 25mm
Housing material	Plastic, PBT-GF30-V0, black
Material active face	Plastic, black
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- For roller conveyors
- Rectangular, 80 x 400 mm, height 25 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

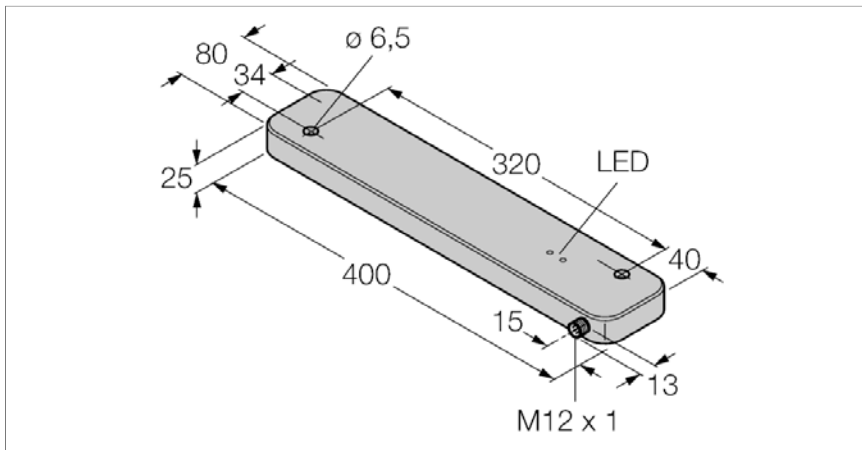
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

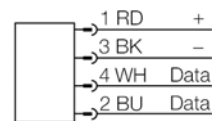
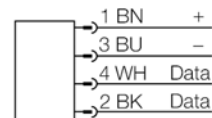
Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

TNLR-Q80L400-H1147L


Type	TNLR-Q80L400-H1147L
Ident-No.	7030234Lengthwise
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 230 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	360 mm
Output function	4-wire, read/write
Design	rectangular
Dimensions	400x 80x 25mm
Housing material	Plastic, PBT-GF30-V0, black
Material active face	Plastic, black
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- For roller conveyors
- Rectangular, 400 x 80 mm, height 25 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503

Connectors .../S2500

Connectors .../S2501

Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

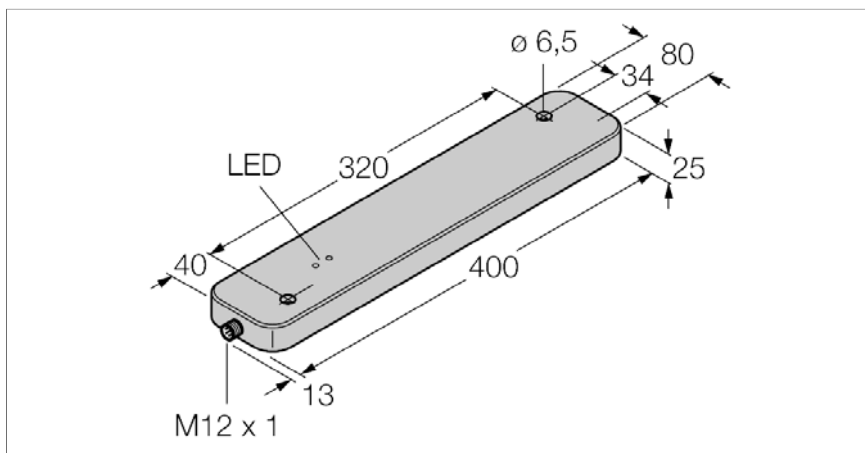
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

TNLR-Q80-R192H132-2M-Ex



Type	TNLR-Q80L400-H1147
Ident-No.	7030204Lengthwise
Mounting condition	non-flush, flush mountable
Ambient temperature	-25...+70 °C
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 230 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Read/write distance max.	360 mm
Output function	4-wire, read/write
Design	rectangular
Dimensions	400x 80x 25mm
Housing material	Plastic, PBT-GF30-V0, black
Material active face	Plastic, black
Connection	connector, M12 x 1
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP67
Operating voltage	LED green

- For roller conveyors
- Rectangular, 80 x 400 mm, height 25 mm
- Active face on top
- Plastic, PBT-GF30-V0
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- M12 x 1 connector, intended only for use with BLident adapter cable

Connectors .../S2503



Connectors .../S2500



Connectors .../S2501



Functional principle

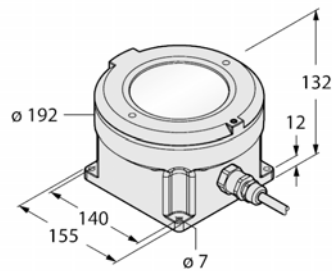
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



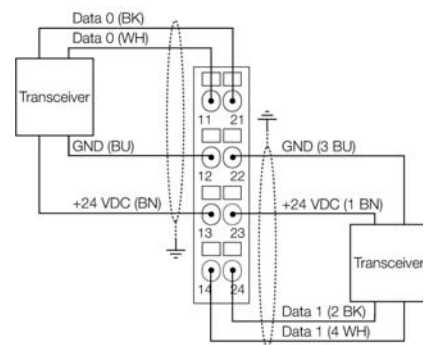
Type	TNLR-Q80-R192H132-2M-EX
Ident-No.	7030400
Ambient temperature	-20...+40 °C
Device designation	Ex II 2G Ex d IIC T6
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 90 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Output function	4-wire, read/write
Connection	Connection cable
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Operating voltage	LED green

- ATEX category II 2 G, Ex-zone 1
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- Connection only via BLident connection cable

Connectors .../S2503



Wiring diagram



Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

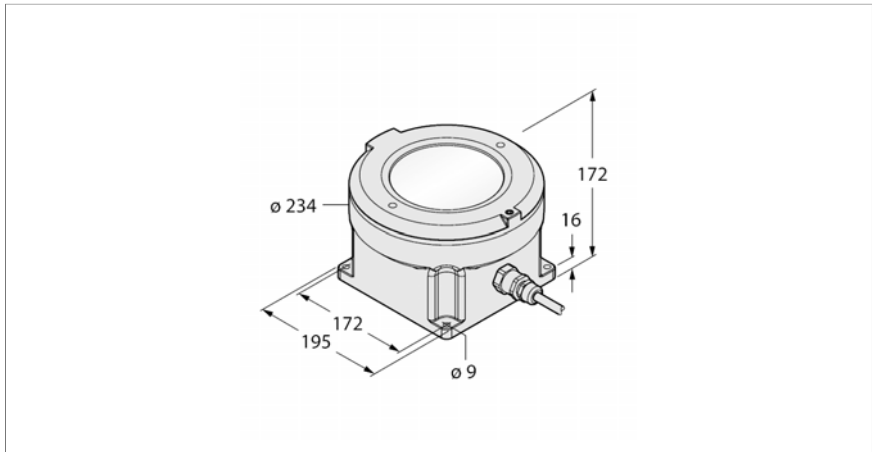
The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

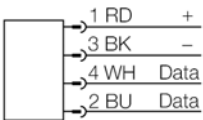
TNLR-Q80-R234H172-2M-Ex



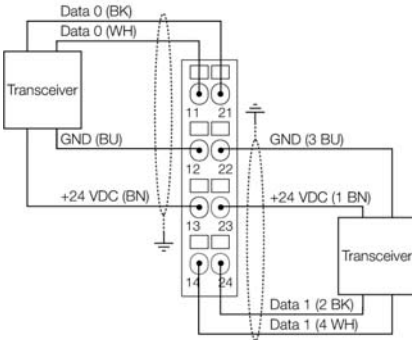
Type	TNLR-Q80-R234H172-2M-EX
Ident-No.	7030401
Ambient temperature	-20...+40 °C
Device designation	Ex II 2G Ex d IIC T6
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 90 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Output function	4-wire, read/write
Connection	Connection cable
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Operating voltage	LED green

- ATEX category II 2 G, Ex-zone 1
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- Connection only via BLident connection cable

Connectors .../S2503



Wiring diagram



Functional principle

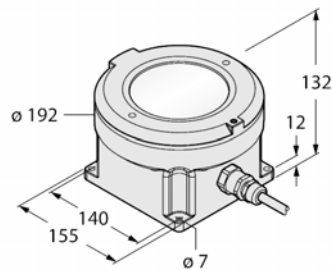
The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!



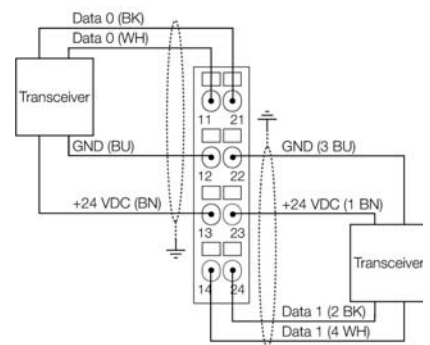
Type	TNLR-Q80-R192H132-2M-EX
Ident-No.	7030400
Ambient temperature	-20...+40 °C
Device designation	Ex II 2G Ex d IIC T6
Operating voltage	19.2...28.8VDC
DC rated operational current	≤ 90 mA
Data transfer	inductive coupling
Working frequency	13.56 MHz
Radio communication and protocol standards	ISO 15693
Output function	4-wire, read/write
Connection	Connection cable
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Operating voltage	LED green

- ATEX category II 2 G, Ex-zone 1
- Every read/write head can communicate with a number of different TURCK data carriers
- Powered and operated only via BLident interface module
- Connection only via BLident connection cable

Connectors .../S2503



Wiring diagram



Functional principle

The HF read/write heads operating at a frequency of 13.56 MHz form a transmission zone the size of which (0...500 mm) varies, depending on the combination of read/write head and data carrier.

The read/write distances mentioned here only represent standard values measured under laboratory conditions.

The read/write distances of the data carriers for mounting in metal TW-R**-M(MF) were determined in metal.

Attainable distances may vary by up to 30 % due to component tolerances, mounting conditions, ambient conditions and material qualities (especially when mounted in metal)

Testing of the application under real operating conditions is therefore essential, especially with read/write on-the-fly!

7.4 Premoulded cables for connecting interface and read/write heads

Table 1:
BL ident®-
Cables and
connectors

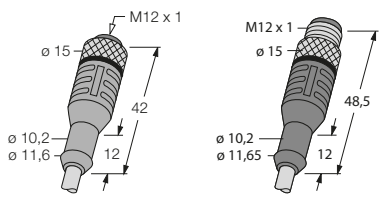
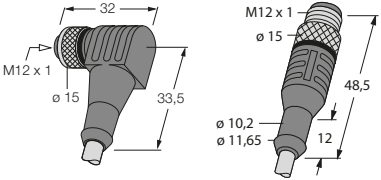
Dimensions/ enclosure length	Type code	Description	Ident- No.
Connection cables			
	RK4.5T-0.3-RS4.5T/S2500 RK4.5T-0.3-RS4.5T/S2503	female straight, male straight, 0.3 m	6699210 7030330
	RK4.5T-2-RS4.5T/S2500 RK4.5T-2-RS4.5T/S2503	female straight, male straight, 2 m	6699200 7030331
	RK4.5T-5-RS4.5T/S2500 RK4.5T-5-RS4.5T/S2503	female straight, male straight, 5 m	6699201 7030332
	RK4.5T-10-RS4.5T/S2500 RK4.5T-10-RS4.5T/S2503	female straight, male straight, 10 m	6699202 7030333
	RK4.5T-25-RS4.5T/S2500 RK4.5T-25-RS4.5T/S2503	female straight, male straight, 25 m	6699211 7030334
	RK4.5T-50-RS4.5T/S2500 RK4.5T-50-RS4.5T/S2503	female straight, male straight, 50 m	8035246 7030335
	Connection cables		
	WK4.5T-2-RS4.5T/S2500	female angled, male straight, 2 m	6699203
	WK4.5T-5-RS4.5T/S2500	female angled, male straight, 5 m	6699204
	WK4.5T-10-RS4.5T/S2500	female angled, male straight, 10 m	6699205
	WK4.5T-25-RS4.5T/S2500	female angled, male straight, 25 m	6638425
	WK4.5T-50-RS4.5T/S2500	female angled, male straight, 50 m	6638426

Table 1:
BL ident®-
Cables and
connectors

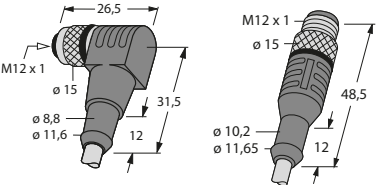
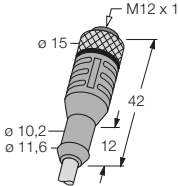
Dimensions/ enclosure length	Type code	Description	Ident- No.
Connection cables			
	WK4.5T-2-RS4.5T/S2503	female angled, male straight, 2 m	7030336
	WK4.5T-5-RS4.5T/S2503	female angled, male straight, 5 m	7030337
	WK4.5T-10-RS4.5T/S2503	female angled, male straight, 10 m	7030338
	WK4.5T-25-RS4.5T/S2503	female angled, male straight, 25 m	7030339
	WK4.5T-50-RS4.5T/S2503	female angled, male straight, 50 m	7030340
Connector			
	RK4.5T-2/S2500 RK4.5T-2/S2503	female straight, 2 m	8035244 7030341
	RK4.5T-5/S2500 RK4.5T-5/S2503	female straight, 5 m	6699206 7030342
	RK4.5T-10/S2500 RK4.5T-10/S2503	female straight, 10 m	6699207 7030343
	RK4.5T-25/S2500 RK4.5T-25/S2503	female straight, 25 m	6638421 7030344
	RK4.5T-50/S2500 RK4.5T-50/S2503	female straight, 50 m	6638422 7030345

Table 1:
BL ident®-
Cables and
connectors

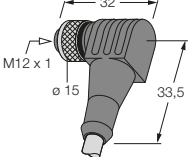
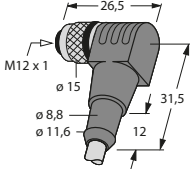
Dimensions/ enclosure length	Type code	Description	Ident- No.
Connector			
	WK4.5T-2/S2500	female angled, 2 m	8035245
	WK4.5T-5/S2500	female angled, 5 m	6699208
	WK4.5T-10/S2500	female angled, 10 m	6699209
	WK4.5T-25/S2500	female angled, 25 m	6638423
	WK4.5T-50/S2500	female angled, 50 m	6638424
	WK4.5T-2/S2503	female angled, 2 m	7030346
	WK4.5T-5/S2503	female angled, 5 m	7030347
	WK4.5T-10/S2503	female angled, 10 m	7030348
	WK4.5T-25/S2503	female angled, 25 m	7030349
	WK4.5T-50/S2503	female angled, 50 m	7030350

Table 1:
BL ident®-
Cables and
connectors

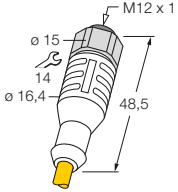
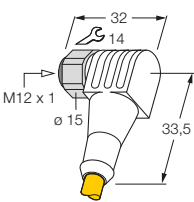
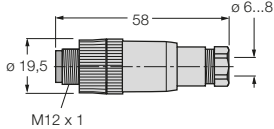
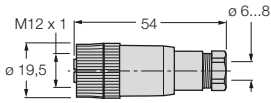
Dimensions/ enclosure length	Type code	Description	Ident- No.
	FB-RK4.5T-5/S2500	For food and beverages female straight, 5 m	7030281
	FB-RK4.5T-10/S2500	female straight, 10 m	7030282
	FB-RK4.5T-25/S2500	female straight, 25 m	7030283
	FB-RK4.5T-50/S2500	female straight, 50 m	7030284
	FB-WK4.5T-5/S2500	female angled, 5 m	7030285
	FB-WK4.5T-10/S2500	female angled, 10 m	7030286
	FB-WK4.5T-25/S2500	female angled, 25 m	7030287
	FB-WK4.5T-50/S2500	female angled, 50 m	7030288

Table 1:
BL ident®-
Cables and
connectors

Dimensions/ enclosure length	Type code	Description	Ident- No.
Connector			
	BS8151-0/9	premoulded M12 male, clamping range 6...8 mm, 5-pole, screw-type terminal	6904613
	B8151-0/9	premoulded M12 female, clamping range 6...8 mm, 5-pole screw-type terminal	6904604
no diagram	CABLE-BLIDENT-100M	Bulk stock 100 m	8036048

8 Operating data of the read/write heads with corresponding data carriers

8.1	Instructions related to operating data.....	2
8.1.1	Distances up to 500 mm	3
8.2	Operating data	4

8.1 Instructions related to operating data

The operating data are sufficient for a basic system specification. If a more accurate evaluation of the performance of the read/write head is needed, the respective cross path can be used.



Note
Please note that marginal parameters like e.g. interference caused by metal are not being taken into consideration for reasons of simplification.
Respective tests are to be conducted prior to start-up.

The following tables with operating data show possible combinations of read/write heads and data carriers.

E = recommended read/write distance (x = undetermined)

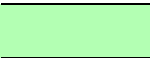
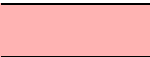
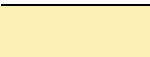
M = max. read/write distance

L = Length of the transmission range at recommended distance

The read/write heads with the digits **S1126** as part of the model type description are optimized for different data carriers.

The following color definitions exist in the tables with the operating data:

Table 12:
Color definition
tables operating
data

Color	Description
	Read/write heads also for Texas Instruments EEPROM/ Infineon EEPROM
	Data carrier = PHILIPS I-Code SLI (SL2)
	Data carrier = Fujitsu FRAM
	Data carrier = PHILIPS I-Code SL1

8.1.1 Distances up to 500 mm

Each read/write head is able to communicate with different data carrier types from the TURCK-program. Different distances are created by combining single read/write heads and data carriers. The reachable distances vary depending on used read/write heads.



Note

The maximum read/write distance (**M**) and the length of the transmission range **L**) only represent typical values under laboratory conditions. The reachable distances can vary up to 30 % because of component tolerances, installation issues involving the application, environmental conditions, and interference caused by materials (especially metals). This is why it is absolutely necessary to test the application (especially while read/write functions are active). In addition, the recommended distance between data carrier and read/write head should be observed if at all possible in order to reach perfect read/write processes despite potential distance variations.

8.2 Operating data

Table 13:
Operating data

Data carriers		Read/write heads		
		TB-M18-H1147	TB-EM18WD-H1147	TN-M18-H1147
TW-R7.5-B128	E	8	8	8
	M	14	14	16
	L	16	16	20
TW-R9.5-B128	E	9	9	9
	M	15	15	18
	L	18	18	22
TW-R16-B64	E			
	M			
	L			
TW-R16-B128	E	10	10	12
	M	17	17	23
	L	14	14	26
TW-R20-B128	E	8	8	10
	M	15	15	22
	L	12	12	26
TW-R20-K2	E	5	5	12
	M	12	12	20
	L	16	16	24
TW-R30-B128	E	8	8	10
	M	17	17	25
	L	22	22	34
TW-R30-K2	E	6	6	16
	M	14	14	31
	L	18	18	32
TW-R50-B128	E			20
	M			41
	L			70

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 13:
Operating data

Data carriers		Read/write heads		
		TB-M18-H1147	TB-EM18WD-H1147	TN-M18-H1147
TW-R50-K2	E			12
	M			30
	L			60
TW-R22-HT-B64	E			
	M			
	L			
TW-R50-90-HT-B128	E			x
	M			11
	L			70
TW-R50-90-HT-K2	E			
	M			
	L			
TW-R50-MF-K2¹	E			7
	M			10
	L			28
TW-I14-B128	E	10	10	12
	M	17	17	23
	L	14	14	26
TW-L43-43-F-B128	E	15	15	25
	M	30	30	45
	L	34	34	44
TW-L82-49-P-B128	E	15	15	20
	M	23	23	40
	L	64	64	72
TW-BS10X1.5-19-B128	E	4	4	6
	M	10	10	11
	L	13	13	16
TW-BS10X1.5-19-K2	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 13:
Operating data

Data carriers		Read/write heads		
		TB-M18-H1147	TB-EM18WD-H1147	TN-M18-H1147
TW-BD10X1.5-19-B128	E	9	9	10
	M	19	19	21
	L	20	20	20
TW-BD10X1.5-19-K2	E	6	6	8
	M	14	14	17
	L	16	16	22
TW-BV10X1.5-19-B128	E	4	4	6
	M	10	10	12
	L	13	13	18
TW-BV10X1.5-19-K2	E			
	M			
	L			
TW-SPP18x1-B128	E	5	5	5
	M	11	11	16
	L	14	14	22
TW-R30-M-B128²	E	8	8	6
	M	12	12	14
	L	16	16	16
TW-R50-M-B128²	E	8	8	10
	M	18	18	22
	L	22	22	22
TW-R80-M-B128²	E			
	M			
	L			
TW-R30-M-K2²	E	7	7	6
	M	10	10	13
	L	18	18	10
TW-R50-M-K2²	E	7	7	10
	M	15	15	22
	L	24	24	32

²Measured values: Data carrier flush, mounted on metal (St37)

Table 13:
Operating data

Data carriers		Read/write heads		
		TB-M18-H1147	TB-EM18WD-H1147	TN-M18-H1147
TW-R80-M-K2²	E			
	M			
	L			
TW-R4-22-B128	E	3	3	5
	M	9	9	13
	L	12	12	20
TW-L86-54-C-B128	E	10	10	15
	M	21	21	39
	L	70	70	74

Operating data of the read/write heads with corresponding data carriers

Table 14:
Operating data

Data carriers		Read/write heads		
		TN-EM18WD-H1147	TB-M30-H1147	TB-EM30WD-H1147
TW-R7.5-B128	E	8	8	8
	M	16	16	18
	L	20	20	20
TW-R9.5-B128	E	9	9	9
	M	18	18	20
	L	22	22	22
TW-R16-B64	E			
	M			
	L			
TW-R16-B128	E	12	12	12
	M	23	23	23
	L	26	20	20
TW-R20-B128	E	10	15	15
	M	22	27	27
	L	26	20	20
TW-R20-K2	E	12	15	15
	M	20	22	22
	L	24	20	20
TW-R30-B128	E	10	13	13
	M	25	30	30
	L	34	32	32
TW-R30-K2	E	16	15	15
	M	31	27	27
	L	32	32	32
TW-R50-B128	E	20	20	20
	M	41	43	43
	L	70	46	46

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 14:
Operating data

Data carriers		Read/write heads		
		TN-EM18WD-H1147	TB-M30-H1147	TB-EM30WD-H1147
TW-R50-K2	E	12	15	15
	M	30	33	33
	L	60	36	36
TW-R22-HT-B64	E			
	M			
	L			
TW-R50-90-HT-B128	E	x	x	x
	M	11	13	13
	L	70	46	46
TW-R50-90-HT-K2	E			
	M			
	L			
TW-R50-MF-K2¹	E	7		
	M	10		
	L	28		
TW-I14-B128	E	12	12	12
	M	23	23	23
	L	26	20	20
TW-L43-43-F-B128	E	25	25	25
	M	45	42	42
	L	44	44	44
TW-L82-49-P-B128	E	20	20	20
	M	40	43	43
	L	72	76	76
TW-BS10X1.5-19-B128	E	6	7	7
	M	11	14	14
	L	16	18	18
TW-BS10X1.5-19-K2	E		4	4
	M		12	12
	L		17	17

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 14:
Operating data

Data carriers		Read/write heads		
		TN-EM18WD-H1147	TB-M30-H1147	TB-EM30WD-H1147
TW-BD10X1.5-19-B128	E	10	15	15
	M	21	24	24
	L	20	24	24
TW-BD10X1.5-19-K2	E	8	10	10
	M	17	20	20
	L	22	22	22
TW-BV10X1.5-19-B128	E	6	6	6
	M	12	13	13
	L	18	18	18
TW-BV10X1.5-19-K2	E		4	4
	M		12	12
	L		17	17
TW-SPP18x1-B128	E	5	10	10
	M	16	17	17
	L	22	26	26
TW-R30-M-B128²	E	6		
	M	14		
	L	16		
TW-R50-M-B128²	E	10	15	15
	M	22	27	27
	L	22	22	22
TW-R80-M-B128²	E			
	M			
	L			
TW-R30-M-K2²	E	6		
	M	13		
	L	10		
TW-R50-M-K2²	E	10	10	10
	M	22	21	21
	L	32	26	26

²Measured values: Data carrier flush, mounted on metal (St37)

Table 14:
Operating data

Data carriers		Read/write heads		
		TN-EM18WD-H1147	TB-M30-H1147	TB-EM30WD-H1147
TW-R80-M-K2²	E			
	M			
	L			
TW-R4-22-B128	E	5	5	5
	M	13	16	16
	L	20	22	22
TW-L86-54-C-B128	E	15	20	20
	M	39	45	45
	L	74	80	80

Operating data of the read/write heads with corresponding data carriers

Table 15:
Operating data

Data carriers		Read/write heads		
		TN-M30-H1147	TN-EM30WD-H1147	TN-Q14-0,15-RS4.47T
TW-R7.5-B128	E	10	10	10
	M	30	30	30
	L	28	28	28
TW-R9.5-B128	E	11	11	11
	M	33	33	33
	L	31	31	31
TW-R16-B64	E			
	M			
	L			
TW-R16-B128	E	20	20	20
	M	38	38	38
	L	44	44	44
TW-R20-B128	E	22	22	22
	M	40	40	40
	L	34	34	34
TW-R20-K2	E	17	17	17
	M	31	31	31
	L	32	32	32
TW-R30-B128	E	22	22	22
	M	43	43	43
	L	56	56	56
TW-R30-K2	E	23	23	23
	M	42	42	42
	L	50	50	50
TW-R50-B128	E	40	40	40
	M	72	72	72
	L	76	76	76

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 15:
Operating data

Data carriers		Read/write heads		
		TN-M30-H1147	TN-EM30WD-H1147	TN-Q14-0,15-RS4.47T
TW-R50-K2	E	30	30	30
	M	58	58	58
	L	76	76	76
TW-R22-HT-B64	E			
	M			
	L			
TW-R50-90-HT-B128	E	10	10	10
	M	42	42	42
	L	76	76	76
TW-R50-90-HT-K2	E	x	x	x
	M	28	28	28
	L	76	76	76
TW-R50-MF-K2¹	E	10	10	10
	M	23	23	23
	L	38	38	38
TW-I14-B128	E	20	20	20
	M	38	38	38
	L	44	44	44
TW-L43-43-F-B128	E	30	30	30
	M	64	64	64
	L	68	68	68
TW-L82-49-P-B128	E	30	30	30
	M	65	65	65
	L	84	84	84
TW-BS10X1.5-19-B128	E	6	6	6
	M	19	19	19
	L	22	22	22
TW-BS10X1.5-19-K2	E	5	5	5
	M	15	15	15
	L	21	21	21

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 15:
Operating data

Data carriers		Read/write heads		
		TN-M30-H1147	TN-EM30WD-H1147	TN-Q14-0,15-RS4.47T
TW-BD10X1.5-19-B128	E	20	20	20
	M	36	36	36
	L	38	38	38
TW-BD10X1.5-19-K2	E	14	14	14
	M	29	29	29
	L	30	30	30
TW-BV10X1.5-19-B128	E	8	8	8
	M	16	16	16
	L	26	26	26
TW-BV10X1.5-19-K2	E	5	5	5
	M	15	15	15
	L	21	21	21
TW-SPP18x1-B128	E	10	10	10
	M	24	24	24
	L	34	34	34
TW-R30-M-B128²	E			
	M			
	L			
TW-R50-M-B128²	E	20	20	20
	M	36	36	36
	L	34	34	34
TW-R80-M-B128²	E			
	M			
	L			
TW-R30-M-K2²	E			
	M			
	L			
TW-R50-M-K2²	E	15	15	15
	M	30	30	30
	L	32	32	32

²Measured values: Data carrier flush, mounted on metal (St37)

Table 15:
Operating data

Data carriers		Read/write heads		
		TN-M30-H1147	TN-EM30WD-H1147	TN-Q14-0,15-RS4.47T
TW-R80-M-K2²	E			
	M			
	L			
TW-R4-22-B128	E	10	10	10
	M	28	28	28
	L	38	38	38
TW-L86-54-C-B128	E	30	30	20
	M	77	77	65
	L	92	92	98

Operating data of the read/write heads with corresponding data carriers

Table 16:
Operating data

Data carriers		Read/write heads		
		TN-CK40-H1147	TN-Q80-H1147	TNER-Q80-H1147
TW-R7.5-B128	E	13	10	
	M	30	34	
	L	42	62	
TW-R9.5-B128	E	14	11	
	M	33	37	
	L	46	68	
TW-R16-B64	E			45
	M			80
	L			92
TW-R16-B128	E	28	20	
	M	50	52	
	L	54	60	
TW-R20-B128	E	30	35	
	M	50	65	
	L	50	72	
TW-R20-K2	E	22	25	
	M	40	52	
	L	36	70	
TW-R30-B128	E	30	35	
	M	53	72	
	L	62	80	
TW-R30-K2	E	30	35	
	M	55	67	
	L	56	80	
TW-R50-B128	E	45	65	
	M	85	118	
	L	96	120	

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 16:
Operating data

Data carriers		Read/write heads		
		TN-CK40-H1147	TN-Q80-H1147	TNER-Q80-H1147
TW-R50-K2	E	38	50	
	M	81	100	
	L	82	110	
TW-R22-HT-B64	E			34
	M			69
	L			92
TW-R50-90-HT-B128	E	15	35	
	M	55	88	
	L	96	120	
TW-R50-90-HT-K2	E	8	20	
	M	51	70	
	L	82	110	
TW-R50-MF-K2¹	E	10	20	
	M	33	35	
	L	50	48	
TW-I14-B128	E	28	20	
	M	50	52	
	L	54	60	
TW-L43-43-F-B128	E	50	60	
	M	90	115	
	L	94	116	
TW-L82-49-P-B128	E	50	65	
	M	96	128	
	L	110	136	
TW-BS10X1.5-19-B128	E	10		
	M	23		
	L	30		
TW-BS10X1.5-19-K2	E	6		
	M	18		
	L	34		

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 16:
Operating data

Data carriers		Read/write heads		
		TN-CK40-H1147	TN-Q80-H1147	TNER-Q80-H1147
TW-BD10X1.5-19-B128	E	25		
	M	47		
	L	52		
TW-BD10X1.5-19-K2	E	20		
	M	39		
	L	44		
TW-BV10X1.5-19-B128	E	10		
	M	22		
	L	33		
TW-BV10X1.5-19-K2	E	6		
	M	18		
	L	34		
TW-SPP18x1-B128	E	15	15	
	M	34	39	
	L	46	60	
TW-R30-M-B128²	E			
	M			
	L			
TW-R50-M-B128²	E	23	25	
	M	46	53	
	L	48	66	
TW-R80-M-B128²	E	25	40	
	M	53	76	
	L	68	76	
TW-R30-M-K2²	E			
	M			
	L			
TW-R50-M-K2²	E	15	15	
	M	37	41	
	L	46	58	

²Measured values: Data carrier flush, mounted on metal (St37)

Table 16:
Operating data

Data carriers		Read/write heads		
		TN-CK40-H1147	TN-Q80-H1147	TNER-Q80-H1147
TW-R80-M-K2²	E	15	20	
	M	47	55	
	L	54	64	
TW-R4-22-B128	E	20	20	
	M	40	48	
	L	50	68	
TW-L86-54-C-B128	E	60	70	
	M	115	146	
	L	132	158	

Operating data of the read/write heads with corresponding data carriers

Table 17:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80-H1147	TN-S32XL-H1147	TNLR-Q80L400-H1147 horizontal
TW-R7.5-B128	E	20		
	M	41		
	L	60		
TW-R9.5-B128	E			
	M			
	L			
TW-R16-B64	E			
	M			
	L			
TW-R16-B128	E	50	20	30
	M	85	67	105
	L	90	125	410
TW-R20-B128	E	50	36	40
	M	88	72	110
	L	92	103	404
TW-R20-K2	E	40	20	30
	M	75	60	80
	L	84	130	390
TW-R30-B128	E	60	30	60
	M	115	80	158
	L	116	120	434
TW-R30-K2	E	60	30	50
	M	98	82	125
	L	104	132	416
TW-R50-B128	E	80	80	100
	M	165	150	268
	L	168	160	484

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 17:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80-H1147	TN-S32XL-H1147	TNLR-Q80L400-H1147 horizontal
TW-R50-K2	E	90	60	90
	M	144	128	230
	L	150	160	466
TW-R22-HT-B64	E			
	M			
	L			
TW-R50-90-HT-B128	E	50	50	70
	M	135	120	238
	L	168	160	484
TW-R50-90-HT-K2	E	60	30	60
	M	114	98	200
	L	150	160	466
TW-R50-MF-K2 ¹	E	30		
	M	57		
	L	70		
TW-I14-B128	E	50	20	30
	M	85	67	105
	L	90	125	410
TW-L43-43-F-B128	E	90	80	80
	M	155	140	222
	L	160	174	464
TW-L82-49-P-B128	E	90	80	100
	M	168	160	270
	L	170	190	488
TW-BS10X1.5-19-B128	E			
	M			
	L			
TW-BS10X1.5-19-K2	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 17:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80-H1147	TN-S32XL-H1147	TNLR-Q80L400-H1147 horizontal
TW-BD10X1.5-19-B128	E			
	M			
	L			
TW-BD10X1.5-19-K2	E			
	M			
	L			
TW-BV10X1.5-19-B128	E			
	M			
	L			
TW-BV10X1.5-19-K2	E			
	M			
	L			
TW-SPP18x1-B128	E	30		
	M	66		
	L	80		
TW-R30-M-B128²	E			
	M			
	L			
TW-R50-M-B128²	E	35		
	M	58		
	L	64		
TW-R80-M-B128²	E	50		30
	M	90		77
	L	90		398
TW-R30-M-K2²	E			
	M			
	L			
TW-R50-M-K2²	E	30		
	M	58		
	L	76		

²Measured values: Data carrier flush, mounted on metal (St37)

Table 17:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80-H1147	TN-S32XL-H1147	TNLR-Q80L400-H1147 horizontal
TW-R80-M-K2²	E	35		30
	M	78		68
	L	80		390
TW-R4-22-B128	E	40	10	20
	M	73	42	80
	L	86	118	368
TW-L86-54-C-B128	E	120	90	120
	M	215	180	360
	L	214	206	484

Operating data of the read/write heads with corresponding data carriers

Table 18:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80L400-H1147L horizontal	TNLR-Q80L400-H1147 crossways	TNLR-Q80L400-H1147 crossways
TW-R7.5-B128	E			
	M			
	L			
TW-R9.5-B128	E			
	M			
	L			
TW-R16-B64	E			
	M			
	L			
TW-R16-B128	E	30	50	50
	M	105	95	95
	L	410	74	74
TW-R20-B128	E	40	60	60
	M	110	102	102
	L	404	86	86
TW-R20-K2	E	30	15	15
	M	80	64	64
	L	390	70	70
TW-R30-B128	E	60	90	90
	M	158	152	152
	L	434	132	132
TW-R30-K2	E	50	70	70
	M	125	122	122
	L	416	100	100
TW-R50-B128	E	100	150	150
	M	268	256	256
	L	484	230	230

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 18:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80L400-H1147L horizontal	TNLR-Q80L400-H1147 crossways	TNLR-Q80L400-H1147L crossways
TW-R50-K2	E	90	120	120
	M	230	216	216
	L	466	190	190
TW-R22-HT-B64	E			
	M			
	L			
TW-R50-90-HT-B128	E	70	120	120
	M	238	226	226
	L	484	230	230
TW-R50-90-HT-K2	E	60	90	90
	M	200	186	186
	L	466	190	190
TW-R50-MF-K2¹	E			
	M			
	L			
TW-I14-B128	E	30	50	50
	M	105	95	95
	L	410	74	74
TW-L43-43-F-B128	E	80	88	88
	M	222	207	207
	L	464	176	176
TW-L82-49-P-B128	E	100	160	160
	M	270	270	270
	L	488	240	240
TW-BS10X1.5-19-B128	E			
	M			
	L			
TW-BS10X1.5-19-K2	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 18:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80L400- H1147L horizontal	TNLR-Q80L400- H1147 crossways	TNLR-Q80L400- H1147L horizontal
TW-BD10X1.5- 19-B128	E			
	M			
	L			
TW-BD10X1.5- 19-K2	E			
	M			
	L			
TW-BV10X1.5- 19-B128	E			
	M			
	L			
TW-BV10X1.5- 19-K2	E			
	M			
	L			
TW-SPP18x1- B128	E			
	M			
	L			
TW-R30-M- B128²	E			
	M			
	L			
TW-R50-M- B128²	E			
	M			
	L			
TW-R80-M- B128²	E	30	40	40
	M	77	77	77
	L	398	56	56
TW-R30-M-K2²	E			
	M			
	L			
TW-R50-M-K2²	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Table 18:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80L400- H1147L horizontal	TNLR-Q80L400- H1147 crossways	TNLR-Q80L400- H1147L crossways
TW-R80-M-K2²	E	30	30	30
	M	68	77	77
	L	390	64	64
TW-R4-22- B128	E	20	40	40
	M	80	78	78
	L	368	68	68
TW-L86-54-C- B128	E	120	200	200
	M	360	345	345
	L	484	306	306

Operating data of the read/write heads with corresponding data carriers

Table 19:
Operating data

Data carriers		Read/write heads		
		TNLR-Q350-H1147	TB-M18-H1147/S1126	TB-EM18WD-H1147/S1126
TW-R7.5-B128	E		8	8
	M		14	14
	L		16	16
TW-R9.5-B128	E		9	9
	M		15	15
	L		18	18
TW-R16-B64	E		10	10
	M		17	17
	L		14	14
TW-R16-B128	E	60	10	10
	M	203	17	17
	L	360	14	14
TW-R20-B128	E	100	8	8
	M	215	15	15
	L	350	12	12
TW-R20-K2	E	80		
	M	155		
	L	310		
TW-R30-B128	E	80	8	8
	M	218	17	17
	L	350	22	22
TW-R30-K2	E	100		
	M	250		
	L	380		
TW-R50-B128	E	200		
	M	462		
	L	530		

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 19:
Operating data

Data carriers		Read/write heads		
		TNLR-Q350-H1147	TB-M18-H1147/S1126	TB-EM18WD-H1147/S1126
TW-R50-K2	E	200		
	M	405		
	L	480		
TW-R22-HT-B64	E			
	M			
	L			
TW-R50-90-HT-B128	E	170		
	M	432		
	L	530		
TW-R50-90-HT-K2	E	170		
	M	375		
	L	480		
TW-R50-MF-K2¹	E			
	M			
	L			
TW-I14-B128	E	60	10	10
	M	203	17	17
	L	360	14	14
TW-L43-43-F-B128	E	200	15	15
	M	416	30	30
	L	458	34	34
TW-L82-49-P-B128	E	240	15	15
	M	500	23	23
	L	518	64	64
TW-BS10X1.5-19-B128	E			
	M			
	L			
TW-BS10X1.5-19-K2	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 19:
Operating data

Data carriers		Read/write heads		
		TNLR-Q350-H1147	TB-M18-H1147/S1126	TB-EM18WD-H1147/S1126
TW-BD10X1.5-19-B128	E			
	M			
	L			
TW-BD10X1.5-19-K2	E			
	M			
	L			
TW-BV10X1.5-19-B128	E			
	M			
	L			
TW-BV10X1.5-19-K2	E			
	M			
	L			
TW-SPP18x1-B128	E		5	5
	M		11	11
	L		14	14
TW-R30-M-B128²	E		8	8
	M		12	12
	L		16	16
TW-R50-M-B128²	E		8	8
	M		18	18
	L		22	22
TW-R80-M-B128²	E			
	M			
	L			
TW-R30-M-K2²	E			
	M			
	L			
TW-R50-M-K2²	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Table 19:
Operating data

Data carriers		Read/write heads		
		TNLR-Q350-H1147	TB-M18-H1147/S1126	TB-EM18WD-H1147/ S1126
TW-R80-M-K2²	E			
	M			
	L			
TW-R4-22-B128	E	50	3	3
	M	197	9	9
	L	328	12	12
TW-L86-54-C-B128	E	360	10	10
	M	662	21	21
	L	660	70	70

Operating data of the read/write heads with corresponding data carriers

Table 20:
Operating data

Data carriers		Read/write heads		
		TB-M30-H1147/S1126	TN-EM30WD-H1147/S1126	TN-M30-H1147/S1126
TW-R7.5-B128	E	8	8	10
	M	18	18	30
	L	20	20	28
TW-R9.5-B128	E	9	9	11
	M	20	20	33
	L	22	22	31
TW-R16-B64	E	12	12	20
	M	23	23	38
	L	20	20	44
TW-R16-B128	E	12	12	20
	M	23	23	38
	L	20	20	44
TW-R20-B128	E	15	15	22
	M	27	27	40
	L	20	20	34
TW-R20-K2	E			
	M			
	L			
TW-R30-B128	E	13	13	22
	M	30	30	43
	L	32	32	56
TW-R30-K2	E			
	M			
	L			
TW-R50-B128	E	20	20	40
	M	43	43	72
	L	46	46	76

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 20:
Operating data

Data carriers		Read/write heads		
		TB-M30-H1147/S1126	TN-EM30WD-H1147/S1126	TN-M30-H1147/S1126
TW-R50-K2	E			
	M			
	L			
TW-R22-HT-B64	E	1	1	9
	M	12	12	27
	L	26	26	44
TW-R50-90-HT-B128	E	x	x	10
	M	13	13	42
	L	46	46	76
TW-R50-90-HT-K2	E			
	M			
	L			
TW-R50-MF-K2¹	E			
	M			
	L			
TW-I14-B128	E	12	12	20
	M	23	23	38
	L	20	20	44
TW-L43-43-F-B128	E	25	25	30
	M	42	42	64
	L	44	44	68
TW-L82-49-P-B128	E	20	20	30
	M	43	43	65
	L	76	76	84
TW-BS10X1.5-19-B128	E			
	M			
	L			
TW-BS10X1.5-19-K2	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Table 20:
Operating data

Data carriers		Read/write heads		
		TB-M30-H1147/S1126	TN-EM30WD-H1147/S1126	TN-M30-H1147/S1126
TW-BD10X1.5-19-B128	E			
	M			
	L			
TW-BD10X1.5-19-K2	E			
	M			
	L			
TW-BV10X1.5-19-B128	E			
	M			
	L			
TW-BV10X1.5-19-K2	E			
	M			
	L			
TW-SPP18x1-B128	E	10	10	10
	M	17	17	24
	L	26	26	34
TW-R30-M-B128²	E			
	M			
	L			
TW-R50-M-B128²	E	15	15	20
	M	27	27	36
	L	22	22	34
TW-R80-M-B128²	E			
	M			
	L			
TW-R30-M-K2²	E			
	M			
	L			
TW-R50-M-K2²	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Table 20:
Operating data

Data carriers		Read/write heads		
		TB-M30-H1147/S1126	TN-EM30WD-H1147/S1126	TN-M30-H1147/S1126
TW-R80-M-K2²	E			
	M			
	L			
TW-R4-22-B128	E	5	5	10
	M	16	16	28
	L	22	22	38
TW-L86-54-C-B128	E	20	20	30
	M	45	45	77
	L	80	80	92

Operating data of the read/write heads with corresponding data carriers

Table 21:
Operating data

Data carriers		Read/write heads		
		TN-EM30WD-H1147/ S1126	TN-CK40-H1147/ S1126	TN-Q80-H1147/S1126
TW-R7.5-B128	E	10	13	10
	M	30	30	34
	L	28	42	62
TW-R9.5-B128	E	11	14	11
	M	33	33	37
	L	31	46	68
TW-R16-B64	E	20	28	20
	M	38	50	52
	L	44	54	60
TW-R16-B128	E	20	28	20
	M	38	50	52
	L	44	54	60
TW-R20-B128	E	22	30	35
	M	40	50	65
	L	34	50	72
TW-R20-K2	E			
	M			
	L			
TW-R30-B128	E	22	30	35
	M	43	53	72
	L	56	62	80
TW-R30-K2	E			
	M			
	L			
TW-R50-B128	E	40	45	65
	M	72	85	118
	L	76	96	120

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 21:
Operating data

Data carriers		Read/write heads		
		TN-EM30WD-H1147/ S1126	TN-CK40-H1147/ S1126	TN-Q80-H1147/S1126
TW-R50-K2	E			
	M			
	L			
TW-R22-HT-B64	E	9	17	9
	M	27	39	41
	L	44	54	60
TW-R50-90-HT-B128	E	10	15	35
	M	42	55	88
	L	76	96	120
TW-R50-90-HT-K2	E			
	M			
	L			
TW-R50-MF-K2¹	E			
	M			
	L			
TW-I14-B128	E	20	28	20
	M	38	50	52
	L	44	54	60
TW-L43-43-F-B128	E	30	50	60
	M	64	90	115
	L	68	94	116
TW-L82-49-P-B128	E	30	50	65
	M	65	96	128
	L	84	110	136
TW-BS10X1.5-19-B128	E			
	M			
	L			
TW-BS10X1.5-19-K2	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 21:
Operating data

Data carriers		Read/write heads		
		TN-EM30WD-H1147/ S1126	TN-CK40-H1147/ S1126	TN-Q80-H1147/S1126
TW-BD10X1.5-19-B128	E			
	M			
	L			
TW-BD10X1.5-19-K2	E			
	M			
	L			
TW-BV10X1.5-19-B128	E			
	M			
	L			
TW-BV10X1.5-19-K2	E			
	M			
	L			
TW-SPP18x1-B128	E	10	15	15
	M	24	34	39
	L	34	46	60
TW-R30-M-B128²	E			
	M			
	L			
TW-R50-M-B128²	E	20	23	25
	M	36	46	53
	L	34	48	66
TW-R80-M-B128²	E		25	40
	M		53	76
	L		68	76
TW-R30-M-K2²	E			
	M			
	L			
TW-R50-M-K2²	E			
	M			
	L			

²Measured values: Data carrier flush, mounted on metal (St37)

Table 21:
Operating data

Data carriers		Read/write heads		
		TN-EM30WD-H1147/ S1126	TN-CK40-H1147/ S1126	TN-Q80-H1147/S1126
TW-R80-M-K2²	E			
	M			
	L			
TW-R4-22-B128	E	10	20	20
	M	28	40	48
	L	38	50	68
TW-L86-54-C-B128	E	30	60	70
	M	77	115	146
	L	92	132	158

Operating data of the read/write heads with corresponding data carriers

Table 22:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80-H1147/ S1126	HT-Ident-H1147	HT-Ident-H1187
TW-R7.5-B128	E	20	13	13
	M	41	30	30
	L	60	42	42
TW-R9.5-B128	E	22	14	14
	M	45	33	33
	L	66	46	46
TW-R16-B64	E	50		
	M	85		
	L	90		
TW-R16-B128	E	50	28	28
	M	85	50	50
	L	90	54	54
TW-R20-B128	E	50	30	30
	M	88	50	50
	L	92	50	50
TW-R20-K2	E		22	22
	M		40	40
	L		36	36
TW-R30-B128	E	60	30	30
	M	115	53	53
	L	116	62	62
TW-R30-K2	E		30	30
	M		55	55
	L		56	56
TW-R50-B128	E	80	45	45
	M	165	85	85
	L	168	96	96

¹Measured values: Data carrier on metal (St37) with plastic screws

Table 22:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80-H1147/ S1126	HT-Ident-H1147	HT-Ident-H1187
TW-R50-K2	E		38	38
	M		81	81
	L		82	82
TW-R22-HT-B64	E	39		
	M	74		
	L	90		
TW-R50-90-HT-B128	E	50	15	15
	M	135	55	55
	L	168	96	96
TW-R50-90-HT-K2	E		8	8
	M		51	51
	L		82	82
TW-R50-MF-K2 ¹	E		10	10
	M		33	33
	L		50	50
TW-I14-B128	E	50	28	28
	M	85	50	50
	L	90	54	54
TW-L43-43-F-B128	E	90	50	50
	M	155	90	90
	L	160	94	94
TW-L82-49-P-B128	E	90	50	50
	M	168	96	96
	L	170	110	110
TW-BS10X1.5-19-B128	E		10	10
	M		23	23
	L		30	30
TW-BS10X1.5-19-K2	E		6	6
	M		18	18
	L		34	34

²Measured values: Data carrier flush, mounted on metal (St37)

Operating data of the read/write heads with corresponding data carriers

Table 22:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80-H1147/ S1126	HT-Ident-H1147	HT-Ident-H1187
TW-BD10X1.5-19-B128	E		25	25
	M		47	47
	L		52	52
TW-BD10X1.5-19-K2	E		20	20
	M		39	39
	L		44	44
TW-BV10X1.5-19-B128	E		10	10
	M		22	22
	L		33	33
TW-BV10X1.5-19-K2	E		6	6
	M		18	18
	L		34	34
TW-SPP18x1-B128	E	30	15	15
	M	66	34	34
	L	80	46	46
TW-R30-M-B128²	E			
	M			
	L			
TW-R50-M-B128²	E	35	23	23
	M	58	46	46
	L	64	48	48
TW-R80-M-B128²	E	50	25	25
	M	90	53	53
	L	90	68	68
TW-R30-M-K2²	E			
	M			
	L			
TW-R50-M-K2²	E		15	15
	M		37	37
	L		46	46

²Measured values: Data carrier flush, mounted on metal (St37)

Table 22:
Operating data

Data carriers		Read/write heads		
		TNLR-Q80-H1147/ S1126	HT-Ident-H1147	HT-Ident-H1187
TW-R80-M-K2²	E		15	15
	M		47	47
	L		54	54
TW-R4-22-B128	E	40	20	20
	M	73	40	40
	L	86	50	50
TW-L86-54-C-B128	E	120	60	60
	M	215	115	115
	L	214	132	132

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9.1 General description of accessories

TURCK offers a variety of accessories for mounting the data carriers and for mounting and protecting the read/write heads.

Spacers are used for mounting data carriers with Ø 30 mm and Ø 50 mm.

The offer includes suitable fixing clamps, as well as quick-mount brackets for the cylindrical read/write heads, types M18 x 1 and M30.

The adjusting rail JS025/037 facilitates mounting and adjustment of the read/write heads, type CK40.

Added protection against mechanical damages is provided by protective clamps which also facilitate mounting, type CK40.

The computer handheld PD-Ident is equipped with numerous features to read from and write to all *BL ident*® data carriers independent of location and under Windows CE; it is also available with WLAN and Bluetooth functionality.



Note

Mounting accessories may decrease the read/write distance. Respective tests need to be conducted prior to start-up.

9.2 Accessories for data carriers with Ø 30 mm and Ø 50 mm

9.2.1 Spacer DS-R30

Figure 27:
Spacer
DS-R30

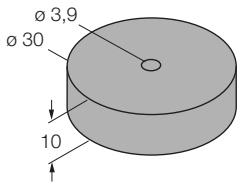


Table 23: Spacer DS-R30	Type code	DS-R30
	Ident-No.	6900512
	Description	Spacer for data carrier with Ø 30 mm
	Material	Plastic

9.2.2 Spacer DS-R50

Figure 28:
Spacer
DS-R50

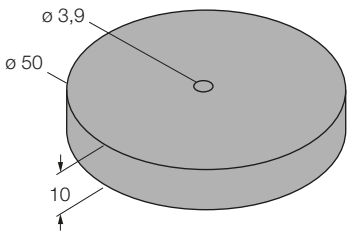


Table 24: Spacer DS-R50	Type code	DS-R50
	Ident-No.	6900386
	Description	Spacer for data carrier with Ø 50 mm
	Material	Plastic

9.3 Accessories for cylindrical read/write heads, type M18

9.3.1 Fixing clamp BS18

Figure 29:
Fixing clamp BS18

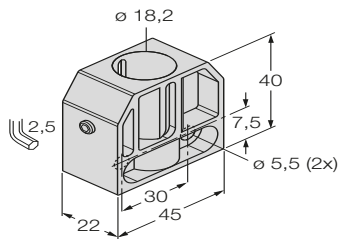


Table 25: Fixing clamp BS18	Type code	BS18
	Ident-No.	69471
	Description	Fixing clamp for cylindrical read/write heads M18 x 1
	Material	Polyamide

9.3.2 Fixing clamp BSN18

Figure 30:
Fixing clamp BSN18

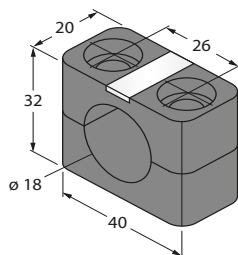


Table 26: Fixing clamp BSN18	Type code	BSN18
	Ident-No.	69472
	Description	Fixing clamp for cylindrical read/write heads M18 x 1
	Material	PBT

9.3.3 Fixing clamp with stopper BST-18B

Figure 31:
Fixing clamp BST-18B



Table 27:
Fixing clamp BST-18B

Type code	BST-18B
Ident-No.	6947214
Description	Fixing clamp with stopper for cylindrical read/write heads M18 x 1
Material	Polyamide

9.3.4 Fixing clamp without stopper BST-18N

Figure 32:
Fixing clamp BST-18N



Table 28:
Fixing clamp BST-18N

Type code	BST-18N
Ident-No.	6947215
Description	Fixing clamp without stopper for cylindrical read/write heads M18 x 1
Material	Polyamide

9.3.5 Quick-mount bracket QM-18

Figure 33:
Quick-mount
bracket QM-18

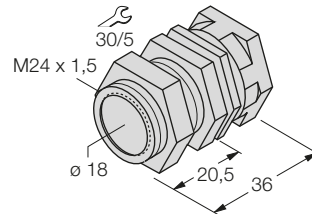


Table 29:
Quick-mount
bracket QM-18

Type code	QM-18
Ident-No.	6945102
Description	Quick-mount bracket for cylindrical read/write heads M18 x 1
Material	Chrome-plated brass

9.3.6 Protective cap SKN/M18

Figure 34:
Protective cap SKN/
M18

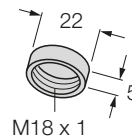


Table 30:
Protective cap SKN/
M18

Type code	SKN/M18
Ident-No.	–
Description	Teflon protective cap for cylindrical read/write heads M18 x 1
Material	PTFE

9.4 Accessories for cylindrical read/write heads, type M30

9.4.1 Fixing clamp with stopper BST-30B

Figure 35:
Fixing clamp BST-30B

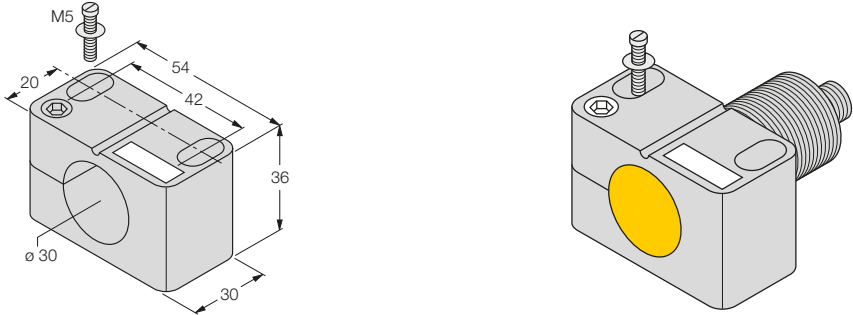


Table 31:
Fixing clamp BST-30B

Type code	BST-30B
Ident-No.	6947216
Description	Fixing clamp with stopper for cylindrical read/write heads M30 x 1.5
Material	Polyamide

9.4.2 Fixing clamp without stopper BST-30N

Figure 36:
Fixing clamp BST-30N

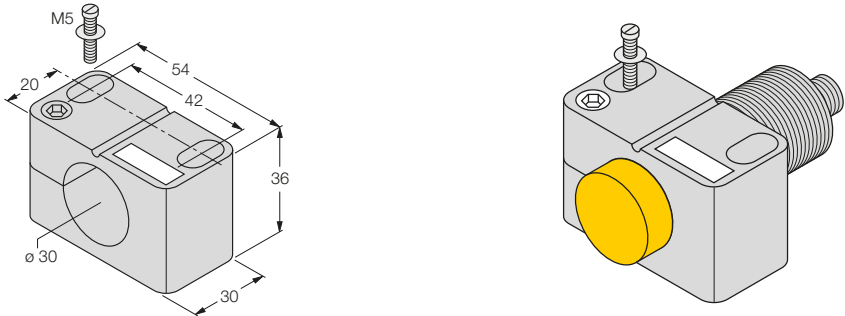


Table 32:
Fixing clamp BST-30N

Type code	BST-30N
Ident-No.	6947217
Description	Fixing clamp without stopper for cylindrical read/write heads M30 x 1.5
Material	Polyamide

9.4.3 Quick-mount bracket QM-30

Figure 37:
Quick-mount
bracket QM-30

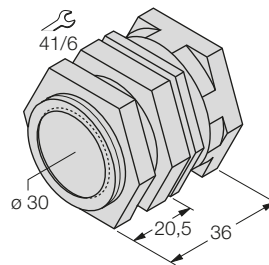


Table 33:
Quick-mount
bracket QM-30

Type code	QM-30
Ident-No.	6945103
Description	Quick-mount bracket for cylindrical read/write heads M30 x 1.5
Material	Chrome-plated brass

9.4.4 Protective cap SKN/M30

Figure 38:
Protective cap SKN/
M30

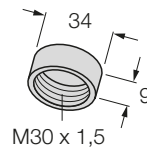


Table 34:
Protective cap SKN/
M30

Type code	SKN/M30
Ident-No.	–
Description	Teflon protective cap for cylindrical read/write heads M30 x 1.5
Material	PTFE

9.5 Shared accessories for cylindrical read/write heads of types M18 and M30

9.5.1 Mounting aid for BST fixing clamps BST-UH

Figure 39:
Mounting aid BST-
UH

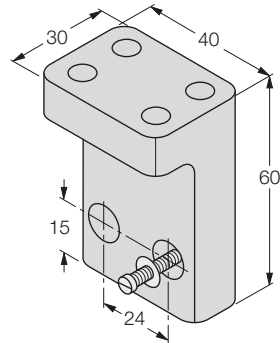


Table 35:
Mounting aid
BST-UH

Type code	BST-UH
Ident-No.	6947219
Description	Mounting aid for BST fixing clamps for cylindrical read/write heads M18 × 1 and M30 × 1.5
Material	Polyamide

9.5.2 Mounting aid for BST fixing clamps BST-UV

Figure 40:
Mounting aid BST-
UV

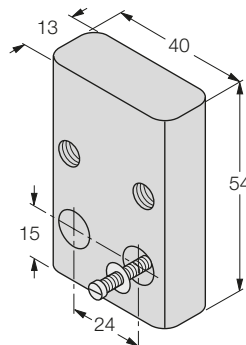


Table 36:
Mounting aid BST-
UV

Type code	BST-UV
Ident-No.	6947218
Description	Mounting aid for BST fixing clamps for cylindrical read/write heads M18 × 1 and M30 × 1.5
Material	Polyamide

9.5.3 Name plates for BST fixing clamps BST-BS

Figure 41:
Name plates BST-BS

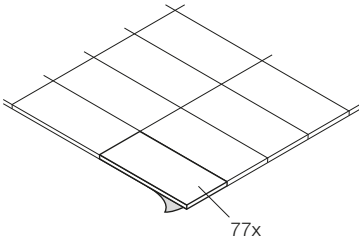


Table 37: Name plates BST-BS	Type code	BST-BS
	Ident-No.	6947220
	Description	Name plates for fixing clamps for cylindrical read/ write heads M18 × 1 and M30 × 1.5
	Material	Plastic

9.6 Accessories for rectangular read/write heads of type CK40

9.6.1 Protective bracket MF-CK40-1S

Figure 42:
Protective bracket
MF-CK40-1S

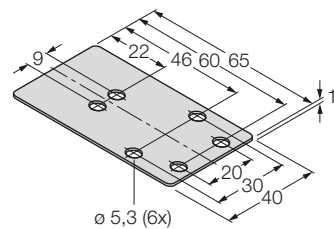


Table 38: Protective bracket MF-CK40-1S	Type code	MF-CK40-1S
	Ident-No.	6900481
	Description	Protective bracket for rectangular read/write heads of type CK40 "one-sided"
	Material	Stainless steel, rustproof

9.6.2 Protective bracket MF-CK40-2S

Figure 43:
Protective bracket
MF-CK40-2S

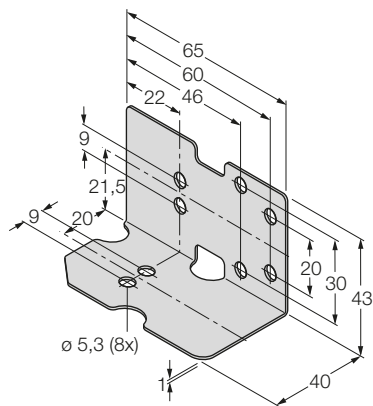


Table 39: Protective bracket MF-CK40-2S	Type code	MF-CK40-2S
	Ident-No.	6900482
	Description	Protective bracket for rectangular read/write heads of type CK40 "angle"
	Material	Stainless steel, rustproof

9.6.3 Protective bracket MF-CK40-3S

Figure 44:
Protective bracket
MF-CK40-3S

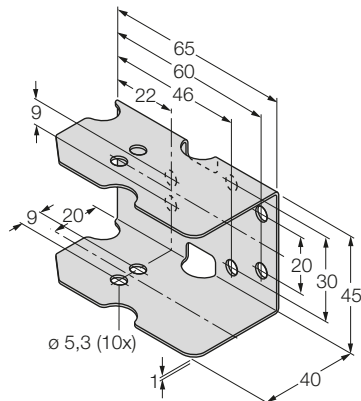


Table 40:
Protective bracket
MF-CK40-3S

Type code		MF-CK40-3S
Ident-No.		6900483
Description		Protective bracket for rectangular read/write heads of type CK40 "U-profile"
Material		Stainless steel, rustproof

9.6.4 Protective housing SG40

Figure 45:
Protective housing
SG40

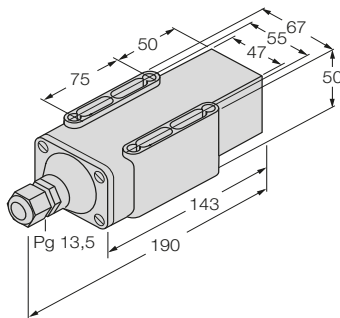


Table 41:
Protective housing
SG40

Type code		SG40
Ident-No.		69500
Description		Protective housing for rectangular read/write heads of type CK40
Material		Polyamide

9.6.5 Protective housing SG40/2

Figure 46:
Protective housing
SG40/2

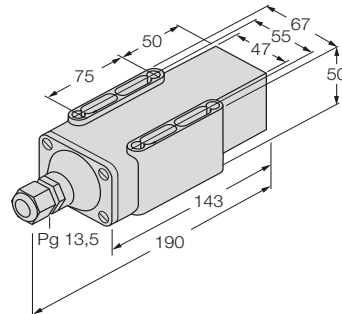


Table 42:
Protective housing
SG40/2

Type code	SG40/2
Ident-No.	69497
Description	Temperature-resistant protective housing for rectangular read/write heads of type CK40
Material	Ultem

9.6.6 Adjusting rail JS 025/037

Figure 47:
Adjusting rail
JS 025/037

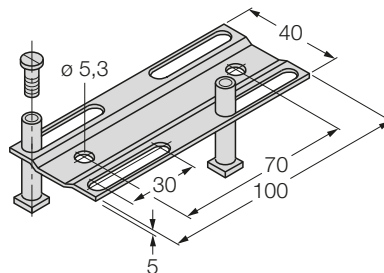


Table 43:
Adjusting rail JS
025/037

Type code	JS 025/037
Ident-No.	69429
Description	Adjusting rail for rectangular read/write heads of type CK40
Material	Stainless steel, rustproof

9.6.7 Protective cap T-CK40-T-FC

Figure 48:
Protective cap
T-CK40-T-FC

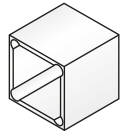


Table 44:
Protective cap
T-CK40-T-FC

Type code	T-CK40-T-FC
Ident-No.	6900146
Description	Teflon protective cap for rectangular read/write heads of type CK40
Material	PTFE

9.6.8 Protective cap T-CK40-D-FC

Figure 49:
Protective cap
T-CK40-D-FC

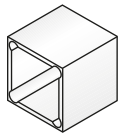


Table 45:
Protective cap
T-CK40-D-FC

Type code	T-CK40-D-FC
Ident-No.	6900146
Description	Teflon protective cap for rectangular read/write heads of type CK40, high temperature resistant
Material	Delrin

9.7 Handheld with accessories**9.7.1 Handheld computer PD-Ident**

Figure 50:
Handheld-
Computer
PD-Ident

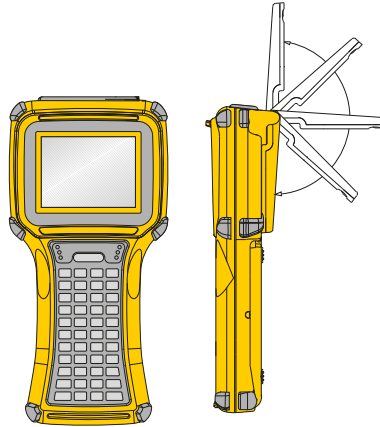


Table 46:
Handheld-
Computer
PD-Ident

Type code	PD-Ident
Ident-No.	1542331
Description	Read from and write to all TURCK data carriers independent of location Windows CE, Illuminated touchscreen Protection Class IP65, Programming device (handheld), Display in decimal, binary, hexadecimal and ASCII codes Definition of password-protected areas possible, Automatic reading of data carrier, incl. docking station

9.7.2 Handheld computer PS-Ident-WLAN with WLAN functionality

Table 47:
Handheld-
Computer
PD-Ident-WLAN

Type code	PD-Ident-WLAN
Ident-No.	1542340
Description	Same features as PD-Ident, also with WLAN and Bluetooth functionality

9.7.3 Handheld accessories

Table 48:
Handheld-
Computer
PD-Ident-PF

Type code	PD-Ident-PF
Ident-No.	1542336
Description	Display protective foil (25 pieces)

Table 49:
Handheld-
Computer
PD-Ident-DS

Type code	PD-Ident-DS
Ident-No.	1542333
Description	Docking station, incl. power supply, RS232 cable

Table 50:
Handheld-
Computer
PD-Ident-RB

Type code	PD-Ident-RB
Ident-No.	1542337
Description	Spare rechargeable battery

Table 51:
Handheld-
Computer
PD-Ident-BC

Type code	PD-Ident-BC
Ident-No.	1542335
Description	Rechargeable battery charger

Table 52:
Handheld-
Computer
PD-Ident-RS

Type code	PD-Ident-RS
Ident-No.	1542338
Description	Spare pins (25 pieces)

Table 53:
Handheld-
Computer
PD-Ident-CB

Type code	PD-Ident-CB
Ident-No.	1542334
Description	Carrying bag

10 Glossary

A

Automation device

Controller with inputs and outputs which is connected to a technical process. Programmable logic controllers (PLC) are a special group of automation devices.

B

Bus

Bus system for transferring data between hardware components (e.g. CPU, memory and I/O level). A bus may consist of multiple parallel data transfer cables (addressing, control and power supply).

Bus system

All units which communicate with each other via a bus.

C

CPU

Central Processing Unit Central processing unit, the heart of a data processor.

D

Distribution

Distribution includes all activities relevant to the transport of goods from one economic agent to another.

DIN

German abbreviation for "Deutsches Institut für Normung e.V."

DP Master Class 1

The automation system (PLC) which mainly controls processing of cyclic process data. The „DPV1“ functions may be additionally or optionally used. (also DPM1/DPC1).

DP Master Class 2

Only acyclic demand data are transferred. This type of data transfer may be completed with the help of an engineering tool (PC user program), for example.

DPV1

Function expansion to PROFIBUS-DP. In addition to the cyclic process data, demand data can be transferred via acyclic communication functions. Acyclic services are processed temporally parallel with low priority and in addition to the cyclic process data transfer.

E

EEPROM - Electrically Erasable Programmable Read-Only Memory

EEPROM describes a non-volatile, electronic memory chip. The EEPROM is comprised of a field effect transistor matrix with isolated floating gate in which each transistor represents a bit.

EMC

Electromagnetic compatibility (EMC) identifies the generally preferred state in which electrical devices do not interfere with each other through undesired electrical or electromagnetic effects.

Earth

In electrical engineering the term earth is used to describe conductive earth and its electrical potential, equalling zero at each point. The term "common ground reference potential" is used in connection with the environment surrounding grounding equipment where the electrical potential of the earth may not be zero.

Grounding

Connection of an electrically conductive part to the ground electrode via grounding equipment.

Ground Electrode

One or more components which have direct and solid contact with the earth.

F Fieldbus

Data network at the sensor / actuator level. A fieldbus connects the devices in the field with a controller. The characteristics of a fieldbus are high data transfer safety and real time behavior.

FRAM - Ferroelectric Random Access Memory

FRAM describes a non-volatile, electronic memory type based on crystals with ferroelectric characteristics.

G GSD - General Station Description

(Formerly device master file) The GSD data file describes the characteristics of the devices which are used in PROFIBUS-DP. The GSD data file is a readable text file and is available in multiple languages. Project planning tools require the device information for configuration and start-up. The content of GSD data files typically comprises general information (e.g. manufacturer name and version); with modular devices, communication characteristics (e.g. module descriptions, texts for diagnostic messages, parameterization options and parameter names).

H Hexadecimal

Number system with 16 as basis; the count starts at 0 to 9 and continues with the letters A, B, C, D, E and F.

I IEC 61131

IEC 61131 is an international standard which addresses the basics for programmable controllers.

Initialization

During initialization the memory space (e.g. variables, code, buffer, etc.) needed for execution is reserved and filled with start values.

IP - International Protection

The protection class (IP) identifies the suitability of electrical devices (e.g. installation material) for different environmental conditions and in addition the protection of persons against potential danger when using the electrical devices.

K Configuration

Systematic arrangement of a station's I/O modules.

L LSB

Least Significant Bit Bit with the lowest value

Logistics

Logistics comprises entire planning, control, execution, preparation and optimization of processes used to transport goods, data, energy and persons, as well as the needed vehicles of transportation.

M Master

The Master controls access during the master-slave process in the fieldbus.

Mode

Operating mode (modus)

MSB

Most Significant Bit Bit with the highest value.

P Parameterization

Setting of parameters of individual bus participants or rather their modules in the configuration software of the DP-Master.

PIB

Proxy Ident Function Block The function block represents an Ident-system in the controller. Thus a standard program interface exists for the actual application.

Bulk Collection

Simultaneous, clear recognition of multiple RFID data carriers which move across a read/write head (transceiver).

R Repeater

In digital communication technology the repeater is a signal regenerator which receives a signal in the bit transfer layer; the repeater then reprocesses the signal and resends it. This type of processing elevates the signal from noise, jitter and any impact on the pulse.

RFID

Radio Frequency Identification

RFID-Technology

This technology permits a contact-free transfer of data with the help of electromagnetic alternating fields. The type of data transfer is also called radio frequency technology. A „[Tag](#)“ [page 10-3](#) is used as data carrier.

S Read/Write head

The read/write head (also read/write device) creates an electromagnetic high frequency field. This is how data is transferred and how the data carrier (transponder) is supplied with power. The data is displayed via modulation of the electromagnetic field.

PLC

Programmable Logic Controller

Station

Function unit or assembly, consisting of multiple elements.

STEP 7

STEP 7 is the actual programming software of the Simatic-S7-PLC family of the company Siemens AG and is the replacement of STEP 5.

T Tag

RFID tags are small transponders in custom application housings, e.g. tag, chip cards and trailers.

Transceiver

Combination of sender and receiver.

In RFID technology transceivers are used as so-called "readers". These devices send a signal which is answered by the transponder (e.g. RFID-tag) and which is again received by the transceiver and sent to a (computer) system for further processing.

Transponder

(Transmitter + Responder)

Responding Device A transponder consists of a microchip (with unique identification No.), a send/receive antenna and a housing. The data is transferred from a reader to a transponder via electromagnetic waves.

Transponder Technology

(also „[RFID-Technology](#)“ page 10-3)

U UHF - Ultra High Frequency

This frequency range belongs to the microwave range. RFID operates in Europe with 865..868 MHz / in USA with 902..928 MHz / in Japan with 955MHz / in China with 840..845 MHz and 920..925 MHz.

UID

Unique Identifier The unique identifier is a unique serial No. for the transponder. The address refers to the data corresponding to the transponder or rather the tagged product. The data can be stored in a database, for example.

TURCK

**Industrial
Automation**



www.turck.com

Support RFID

Tel. +49 (0) 208 4952-4666
E-Mail rfid-support@turck.com

Hans Turck GmbH & Co. KG

Witzlebenstraße 7
45472 Mülheim an der Ruhr
Germany

Tel. +49 (0) 208 4952-0
Fax +49 (0) 208 4952-264
E-Mail more@turck.com
Internet www.turck.com



D101583 1212